THE FOURTEENTH YEARBOOK

OF THE

NATIONAL SOCIETY FOR THE STUDY OF EDUCATION

PART I

MINIMUM ESSENTIALS IN ELEMENTARY-SCHOOL SUBJECTS—STANDARDS AND CURRENT PRACTICES

BY

H. B. WILSON, H. W. HOLMES, F. E. THOMPSON, R. G. JONES, S. A. COURTIS, W. S. GRAY, F. N. FREEMAN, H. C. PRYOR, J. F. HOSIC, W. A. JESSUP, W. C. BAGLEY

Edited by S. CHESTER PARKER, *Secretary*

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This Yearbook is the 1915 report of the Committee of the Department of Superintendence of the National Education Association on Economy of Time in Education.

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REPORTS OF INVESTIGATORS CO-OPERATING WITH THE COMMITTEE ON ECONOMY OF TIME OF THE DEPARTMENT OF SUPERINTENDENCE OF THE NATIONAL EDUCATION ASSOCIATION

PREFACE

This volume continues the policy that has characterized the publication of Yearbooks in recent years by the National Society for the Study of Education, namely, to present discussions that deal directly with the practical problems of readjustment that now confront American educators, and to include descriptions and suggestions that will prove of direct practical value to teachers and administrators in solving these problems in their own schools.

At the meeting of the Department of Superintendence of the National Education Association in Richmond, Virginia, in February, 1914, the Committee on Economy of Time from this organization presented a report and was continued for another year. Members of this committee who were also members of the National Society for the Study of Education, and who were familiar with the policy of the latter organization in publishing Yearbooks *before* the meeting at which they were to be discussed, suggested the possibility of the National Society's publishing the 1915 report of the committee in this way. This plan was adopted and carried out. The present volume is the result.

PART I

INTRODUCTION

CHAPTER I

THE MINIMUM ESSENTIALS IN ELEMENTARY-SCHOOL SUBJECTS

REPORT OF THE COMMITTEE ON ECONOMY OF TIME

H. B. WILSON, *Chairman*
Superintendent of Schools, Topeka, Kansas

This report to the National Department of Superintendence by its committee on Economy of Time in Elementary and Secondary Education, made with the assistance of a number of co-operating investigators, constitutes the fourth large effort within the last two decades by some branch of the National Education Association to examine and improve the curriculum of the public schools. Attention was first directed to the high-school curriculum in the report of the Committee of Ten. The report of the Committee of Fifteen was concerned with the training of teachers and the organization of city schools, but it also gave large attention to the correlation of the studies of the elementary schools. The report of the Committee of Twelve on Rural Schools, in its treatment of instruction and discipline, discussed the course of study, accepting the report of the Committee of Fifteen on the several branches of the course of study.

The present report on the minimum essentials in certain subjects of the elementary curriculum is one result of an effort to develop a program for economizing time in public-school education. The attack on this large problem was begun in the National Council of Education in 1903 under the leadership of President Emeritus James H. Baker.[1] The

[1] The chief initial impetus toward the movement for economizing time in education, probably antedating somewhat the attack on the problem by the National Council, was given by the late President William R. Harper, of the University of Chicago, before a notable gathering at the University in the autumn of 1902, where he read a brief paper proposing a scheme for saving two years of time in the completion of a college course. Participating in this discussion were the late Superintendent Louis Soldan, of St. Louis, and Professor John Dewey. See "Shortening the Years of Elementary Schooling," by John Dewey, *School Review*, II, 17, January, 1903.

most significant result thus far of the work of the Committee from the Council is the report on "Economy of Time in Education," published in 1913 as *Bulletin 38* of the Bureau of Education. Upon the initiative of the Council committee the Department of Superintendence authorized the appointment of a committee of five at the meeting of the Department in Mobile in February, 1911. The earlier efforts of this committee were directed toward arriving at an understanding of the meaning and scope of the problem and in enlisting the co-operation of those who can aid in a fundamental way in its solution.

Preliminary reports defining in outline form the scope of the problem and the possible lines of attack in its solution were made at the meetings of the Department in St. Louis in 1912 and in Philadelphia in 1913. At the meeting of the Department one year ago in Richmond, two typical reports on English and arithmetic were presented as illustrative of the type of studies which the committee had come to believe should be made in all subjects, in the interest of determining the proper content for the subjects of study in the elementary curriculum. The Department responded to the presentation of these reports and to the projected plan for treating all subjects in the elementary curriculum similarly most enthusiastically by recommending that an appropriation sufficient to defray the expenses of such a piece of work be made, and guaranteeing the provision of the same in case the Executive Committee of the National Education Association found it impossible to appropriate the money from funds at its disposal.

While the Department committee was made responsible by a resolution adopted at the meeting of the Department in St. Louis in 1912 for studying possible ways of economizing time both in the elementary and in secondary schools, our attention thus far has been mainly directed, and in this report is wholly directed, to the study of elementary-school problems, reserving until a later time the study of such problems in the secondary field as are vitally related.

In the report referred to above the Council Committee on Economy of Time in Education brought forcibly to the attention of the country the desirability of shortening the period of formal education. The following proposals pertinent to the purposes of the Department Committee on Economy of Time in Education are quoted (see pp. 18 and 19):

1. The contemporary judgment is that the period of general education should be shortened at least two years.

4. In the elementary and secondary period, economy through selection, elimination, vital methods, relation to modern life, would yield much better results and little or nothing would be lost by the proposed change in time.

8. To define the form of discussion, the following divisions of the entire period of general and special education are proposed:

Elementary education	6–12
Secondary education (2 divisions—4 years and 2 years)	12–18
College	18–20 or 16–20
University (graduate school and professional schools)	20–24

Preceding their statement of conclusions, the committee said:

When by economy—this does not mean more cramming, but less—as much can be accomplished in the elementary and secondary schools and in the first two years of college as is now done in the full sixteen years, the last two years of college can count toward graduate and professional degrees and two years in the whole period can be saved.

Upon the general thesis that the period of formal education should be shortened there appears to be fairly general agreement. Where and how this shortening is to take place is, however, not so generally agreed upon. The committee of the Council believes that the greatest waste in education is in the elementary schools and has recommended that the period of elementary education be reduced to six years, maintaining that the essential knowledge, habits, ideals, and attitudes for individual and social needs can be and should be acquired in that time. This attitude on the part of the Council was evidenced in the resolution proposed by Professor Suzzallo of the committee of the Council in closing his address before the meeting of the Department of Superintendence at Mobile, as follows:

The main requirement at this point in our progress is to investigate the waste in the elementary schools and to make definite proposals for eliminating the archaic and least useful materials of the course of study and to propose more economic methods of teaching. To this end I move that the Department of Superintendence appoint a committee of five on Economy of Time in Elementary Education, this committee of five to co-operate with the general Committee on Economy of Time in Education.

The same attitude is further indicated in the following quotations from the report of the Council:

We approach now the question of saving time in the elementary period or of accomplishing more within the time. . . . . The committee agrees that there is much waste in elementary education and that the elementary period should

be from six to twelve. Nearly all our correspondents are emphatic regarding waste and the importance of shortening the entire period of general education. Saving of time can be made in the following ways:

1. The principle of selection is, first: Choose the most important subjects and the most important topics; make a distinction between first-rate facts and principles and tenth-rate; prune thoroughly, stick to the elements of a subject; do not try to teach everything that is good; confine the period of elementary education to mastering the tools of education. This does not prevent inspirational work, which is a demand on the skill of the teacher rather than on time. A great secret of education is to accomplish a maximum of training with a minimum of material. This is especially true of formal subjects; it is true also of inspirational subjects, in that after a general survey of the field emphasis should be placed upon a few selected points. Under the conditions above enumerated the formal elementary period can end in six years.

The committee of the National Department of Superintendence is not yet committed to the thesis that it is necessary or desirable to shorten the period of elementary education. It does, however, agree with the Council committee that there is great waste in elementary education and that either the period should be shortened or that more should be accomplished in the time allotted, or both. Economy of time in elementary education may mean either a shortening of the period of formal education or the more economical use of the time required, whatever it may be, in order that the maximum accomplishment in knowledge and skill may result. It is the latter conception of educational economy that is the more fundamental. The significant problem, then, is not what can be done to accomplish in six years what now requires eight years, but what can be done in the elementary schools of our democracy to secure that degree of accomplishment in knowledge, character, and skill essential to equip those who finish the elementary schools with an intense desire and the training necessary to make the greatest possible additional personal growth and with the disposition and ability to contribute to the welfare of society. Society is still depending primarily upon the elementary schools to furnish not only the tools of knowledge but also those facts, concepts, and principles essential in a democracy to common discussion and to the collective consideration of common problems. The training of the elementary schools must supply the requisite basis for "mutual intercourse, mutual understanding, and mutual sympathy," which are absolutely essential to a successful democracy. It is from the point of view of insuring that the schools supply this common basis for conference and

intercourse that the determination of the indispensable content for each subject of study is of paramount significance. We must determine what the absolute essentials are in the equipment of our citizenship that they may discuss and confer on a sufficiently high level to insure the progressive evolution of our democratic society. By concentrating our teaching efforts upon these essentials, their thorough teaching and permanent fixation will be insured in the minimum time.

Our first objective, therefore, is not merely time gain. If gain is accomplished, it must issue because the efficiency can be secured in less time. Saving of time is undoubtedly desirable if it can be secured without sacrificing efficiency. The saving of time will not only result in less cost to the taxpayers for the maintenance of the public schools but it will likewise result in increasing the earning power of those who graduate from these schools, owing to their earlier entrance into remunerative occupations.

Economy in time under either conception may be attained (1) by the elimination of nonessential subjects or subject-matter and by including only such additional significant material as is clearly vital in realizing the ends of elementary education; (2) by the improvement in methods of teaching and learning; (3) by the organization of the whole school system and the course of study so that each part may be taken at the optimal time in the child's development. In view of the objectives in appointing the committee from the Department of Superintendence, attention is first devoted to (1) in this report. For logical reasons also (1) should be treated first.

The ideally constructed course of study for the elementary schools in the interest of providing adequate general education is one stripped of all content not essential to the needs of modern life and organized so as to harmonize with the child's growth in capacity and experience. Its presentation with due regard to the most efficient methods of teaching and learning must be assumed, of course, if it is to secure the largest possible results. With reference to this task Professor Dewey says the problem is "the selection of the kind, variety, and due proportion of subjects answering most definitely to the dominant needs and powers of presentation that will cause the selected material to enter vitally into growth."[1] Again he says: "The selection and grading of material in the course of study must be done with reference to the proper

[1] See Dewey "The Psychology of the Elementary Curriculum" in *The School and the Child*.

nutrition of the dominant directions of activity in a given period. The difficulty is in seeing just what materials and methods, in what proportion and arrangement, are available and helpful at a given time."[1]

Before the question can be convincingly answered whether the period of elementary education can be shortened, it would seem necessary to determine the minimum standard curriculum selected and organized to meet fully the general aims or purposes of elementary education, specifying a minimum essential content for each subject of this standard curriculum. Whether the aims of the elementary school can be satisfactorily realized in six years or not, or in what time they can be realized, can be discovered only after such a determination has been made. In other words, we must work out a minimum content for each subject of study, holding in mind those standards of attainment which good teaching should seek to approximate. With this tentatively accomplished, we shall have a basis for determining the standard time required for executing such a course of study.

Whatever time may ultimately prove to be necessary, the fundamental questions are: (1) What subjects are essential constituents of the elementary curriculum? (2) What is the absolutely essential content in each subject? It is the second question on which the Department committee and the co-operating investigators have been working during the past year. The results of these investigations follow in this *Yearbook*. It is perhaps unnecessary to point out what a careful reading will render evident, that in the time available it was impossible to make the reports more than partial and tentative. Not only do the results submitted need the testing of use and criticism, but much more work remains to be done.

The formulation of a minimum essential content for any school subject is a complex problem and is beset with theoretical and practical difficulties. Various methods of procedure may be adopted: (1) An examination may be made of representative curricula the country over to determine the consensus of experience and practice as to the topics to be included, time to be allotted, etc. (2) Subject-matter to be included and time allotments may be determined on the basis of judgments of superintendents, principals, teachers, subject-matter experts, and students of education. (3) An examination may be made of progressive experiments designed to secure economy in time either by elimination

[1] *Op. cit.*

or by improvements in methods and organization. (4) Each part or each subject may be subjected to some more fundamental educational criteria or tests of inclusion, emphasis, or exclusion. Until there are definitely established and accepted standards of attainment based on individual capacities and social needs, the determination of minimum essentials by any method is a difficult problem.

Is it possible to arrive at a definition of the function of the elementary school which will be generally accepted? And more especially, is it possible to derive from such a definition acceptable fundamental principles which may guide in determining the minimum essentials in school subjects? Apparently our leaders in education agree that the function of the elementary school is to provide those educational opportunities necessary to insure, with the assistance of the other institutions of society, the acquisition on the part of elementary-school children of those habits, skills, knowledges, ideals, and prejudices which must be made the common property of all, that each may be an efficient member of a progressive democratic society, possessing the power of self-support and self-direction, the capacity and disposition for co-operative effort, and, if possible, the ability to direct others in positions of responsibility requiring administrative capacity.

The selection of subject-matter for any given period must be made with reference to the capacities and interests of children at this period and with reference to common social needs. Ultimately, the content and emphasis in each subject of study is determined by society's judgment in reference to its needs, while the organization of this content and the methods which shall be employed in teaching children are determined by the nature, ability, and interests of the children to be taught.

Two general principles of inclusion of subject-matter may therefore be formulated thus: (1) Whatever is included in any subject for any age must be reasonably comprehensible by children of that age. (2) Whatever is included must minister to the social needs common to ordinary American children. Corresponding principles of elimination may be formulated thus: (1) Subject-matter too difficult for the majority of normal children without undue expenditure of time and energy must be excluded. (2) Subject-matter that is not essential for at least the majority of children must be excluded. The fixing of minimum essentials upon any other basis than the abilities and social needs of the majority of children leads at once into difficulties. A curriculum or a content

for any subject based on the ability and needs common to all normal children gives an impossibly low standard. One based on the capacities and needs of 75 per cent of children is likewise too low to be useful. On the other hand, a minimum standard which is adjusted to the capacities of but 50 per cent of children is a misnomer.

The only escape from the dilemma is a graduated series of essentials progressing from the skills and abilities necessary for all normal children up through those that are desirable for all normal children, if they can be attained. The great variability in individual capacities and the possibly equally great variability in individual needs for effective social adjustment make any other basis of selection impossible.

If it is impossible to discover from educational theory fundamental tests for exclusion or inclusion, we are driven to the method of determining minimum essentials on the basis of the best current practices and experimentation which give satisfactory results. Those results are satisfactory which meet adequately the common needs of life in society. This in the main is the method employed in the investigations upon which the following reports in the *Yearbook* are based.

Following the introduction, Part I, the report consists of three parts. In the general survey, constituting Part II, Professor Henry W. Holmes reports a study of the time distribution by subjects and grades in 50 representative cities selected at random, which was made as a means of determining the current practice in reference to the grade in which the various subjects of the elementary schools are taught and to the time which is devoted to their teaching. His conclusions are summarized on p. 21 *infra*. Following this, Professor Frank E. Thompson has characterized the types to which experiments in economizing time in the country at large can be reduced. He holds, on the evidence of reports from progressive educators in all parts of the country, that there is a strong movement for educational efficiency, but that the movement is essentially for rearrangement and new emphases: very few would reduce the total time.

Parts III and IV of the report are devoted to such studies in the subjects of reading, writing, spelling, composition, and grammar, history, geography, and literature as were possible and necessary to enable those in charge of the studies to make a tentative formulation of the minimum requirements in each of the subjects. Part III deals with the formal subjects. Part IV presents reports regarding the essentials in the content subjects of history, geography, and literature.

Three reports are presented touching the formal aspects of oral and silent reading. The determination of the minimum essentials in reading involves two problems: (1) the determination of standard vocabularies, and (2) the determination of standard rates of reading. Superintendent Jones discusses the first of these, setting forth the procedure employed in determining standard vocabularies and in applying the same in testing the reading ability of pupils. Mr. Courtis' report deals with the determination and application of standard rates in reading. He sets forth the elements entering into skill in reading and defines the degrees of skill that are produced at each grade by present training, thus establishing the basis for indicating quantitatively the minimum reading ability in amount and degree of assimilation which should be attained in each grade. The practical advantage of objective standards in reading to classroom teachers and administrators is concretely set forth, and the procedure contended for in reading is supported by stating briefly the objective standards which have been developed in writing, composition, arithmetic, and spelling. To these reports has been added a selected bibliography, prepared by Mr. Gray, with a brief characterization of each reference.

The standard for quality and speed in writing which should be required in grades two to eight inclusive was derived by Professor Freeman upon the basis of the returns (1) in a writing test from fifty-six cities of the United States having a population of 30,000 or over, and (2) in a questionnaire sent to various employers of clerical workers in Chicago. The questionnaire sought information regarding the degree of excellence in writing which employers require of applicants for positions. This information was of value in determining the standard of attainment in writing which pupils should reach by the end of the elementary schools. The report also makes valuable tentative suggestions in reference to the time which is necessary per day in each grade for attaining the standards proposed.

Mr. Pryor's report on spelling discusses both the minimum content and the minimum time. He reviews briefly the word lists developed by Ayres, Jones, and others and concludes that from 750 to 1,000 words (no list is offered) are sufficient in the spelling course for the elementary schools. It is suggested from rather limited data that the tendency is to reduce the time formerly devoted to spelling and that this reduction is made possible by improved methods of teaching. The use of such scales as those developed by Buckingham and Ayres in determining word

lists, spelling efficiency, and requisite time for spelling is briefly indicated. A carefully selected bibliography concludes the report.

In his discussion of language and grammar, Professor Hosic has reviewed very thoroughly all experiments and investigations in English which are germane to his problem. The various scales available for measuring the worth of English composition are carefully evaluated and the studies of basic importance in determining the content of technical instruction in English are reviewed for their contribution to the task in hand. The standards in English proposed before the Secondary Department of the National Education Association in 1908 and before the Commission on the Reorganization of Secondary Education in 1914 are considered as to their bearing on the present undertaking. Professor Hosic finds the time devoted to language in the elementary schools cannot likely be cut down with safety. He urges the need for more definite standards of omission and inclusion, the better organization and teaching of the content retained, the establishment of more definite goals of achievement, and the development of more adequate and practical scales for the measurement of the results of English work. The report closes with a very complete and carefully analyzed bibliography.

Arithmetic is the last subject discussed in Part III. Professor Jessup's recommendations are not only based upon a careful review and consideration of all other relevant studies and investigations but also upon the return showing the practice in the content of arithmetic in 867 cities having a population of 4,000 or over and in 114 counties of the United States. The following topics are treated statistically from the data secured: (1) the elimination of topics; (2) increased emphasis on topics; (3) the recitation-time distribution; (4) the percentage of drill; (5) grade textbook introduction; (6) grade emphasis on topics. A definite standard for attainment in the fundamentals is proposed for each grade, and in conclusion a reduction in the time devoted to arithmetic is recommended.

In Part IV, Professor W. C. Bagley describes three methods which have been employed under his guidance for determining the content in geography and history which it is most important to teach and reports tentatively the results derived from the application of each method. Use of the "newspaper-magazine" method developed suggestive data for both geography and history. The methods of determining minima

by taking the "judgments of specialists" and by "a comparison of school texts" were employed with significant results in history. The tentative results are valuable as guides in the determination of the minimum essentials in geography and history and in indicating the proper emphasis in teaching these essentials.

Professor Hosic treats literature and his contribution will be found on p. 147.

Even a general study of the following report will render it evident that the task of formulating completely the minimum essentials in the subjects treated has not been finished. As much has been accomplished, perhaps, as it was reasonable to expect in the time available to those making the reports. In the present state of our knowledge of social and educational values it is not possible to complete the task with any mathematical certainty that the results offered would meet the educational needs even in a single community. The undertaking is increasingly difficult when the formulation offered is intended to serve as a guide in course of study-making for the elementary schools of the whole United States. Further time and more extended opportunity for conference and experimentation would render it possible to be more specific as to details. The report on language and grammar, history and geography, call particular attention to this. Nothing like the degree of completeness secured in these reports would have been possible but for the existence of the investigators who co-operated with the committee, taking complete charge of the reports as they appear below.

The omission from treatment in this report of the subjects of music, drawing, sewing, cooking, manual training, other forms of handwork, and nature-study, or elementary science, must not be interpreted either to mean that their content is not in need of critical evaluation or that their importance in the curriculum is undervalued. Rather, it was found impossible to add them to the subjects considered and to bring all the matter which this would render necessary to treat within the limits it seemed reasonable to set for this report.

Even if the problem attempted in this report had been more adequately done, only a fair beginning would have been made in the undertaking to accomplish all of the economies which are both possible and desirable in elementary-school education. Further work in this field with the view of completing it for the time being may yet be secured if it seems desirable. There will still remain, however, the problem of

improving the organization of the system and the technique of classroom teaching, that the minimum essentials in the curriculum may exercise the maximum of educational effect with the greatest possible economy of time and effort.

(Signed) H. B. Wilson, *Chairman*
John H. Francis
Frank E. Spaulding
Frank E. Thompson
O. I. Woodley
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PART II

GENERAL SURVEY

CHAPTER II

TIME DISTRIBUTIONS BY SUBJECTS AND GRADES IN REPRESENTATIVE CITIES

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AND

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I

This report deals with the distribution of time by subjects and grades in the elementary schools of fifty[1] American cities, representing all sections of the country and a wide variety of conditions. The outstanding fact of the report is the great divergence in the allotments—there is still marked disagreement as to the distribution of time (and hence of attention and energy) among the elementary-school subjects. Such

[1] Baltimore, Md.; Berkeley, Cal.; Boise, Idaho; Boston, Mass.; Boulder, Colo.; Cheyenne, Wyo.; Cincinnati, Ohio; Detroit, Mich.; East Orange, N.J.; Fargo, N.D.; Frankfort, Ind.; Freeport, Ill.; Haverford, Pa.; Indianapolis, Ind.; Kansas City, Kan.; Lexington, Ky.; Lincoln, Neb.; Louisville, Ky.; Madison, Wis.; Manchester, N.H.; Milwaukee, Wis.; Minneapolis, Minn.; Montclair, N.J.; Montpelier, Vt.; Mt. Vernon, N.Y.; Nashville, Tenn.; Newark, N.J.; New Haven, Conn.; New Orleans, La.; Newton, Mass.; Omaha, Neb.; Passaic, N.J.; Philadelphia, Pa.; Phoenix, Ark.; Providence, R.I.; Rochester, N.Y.; Sacramento, Cal.; Salt Lake City, Utah; San Francisco, Cal.; Seattle, Wash.; Sioux Falls, S.D.; Solvay, N.Y.; Southington, Conn.; St. Louis, Mo.; Spokane, Wash.; Tacoma, Wash.; Topeka, Kan.; Washington, D.C.; Westerly, R.I.; Wheeling, W.Va. Other cities responded, but in some cases the data came too late and in others we could not use them. We found it necessary, for instance, to deal only with eight-grade systems.

disagreement is doubtless in part irremediable—in so far, for example, as it is due to legitimate differences in the length of the school course or of the school year, or to legitimate differences in public demand, or to fundamental differences in school populations. But in part it is caused by differences of opinion as to points on which opinion may gradually give way to knowledge; as, for example, the subjects to be commonly taught, their relative social values, their essential content, reasonable standards of accomplishment, the amount of time needed to reach such standards, and the most effective methods. Until we can decide such points our tables of time allotments are but guesses, and an average of allotments but an average guess. A statistical standard, however, is better than none, since it shows at any rate the trend of opinion and practice.[1]

II

Official tables of time allotments do not, of course, represent actual distributions of time. Teachers depart from the schedule for various reasons, good or bad, and there are many interruptions in the work of the school year. No child gets just the number of hours of classwork in arithmetic, or any other subject, which the published school schedule promises him. Eventually our standards must be based on the study of time actually consumed; but even then we shall have to allow for obstacles and interruptions, and meanwhile the assigned times show at least the official prescriptions from which actual times differ. They give us starting-points.

In studying official allotments, however, difficulties arise from differences in the use and meaning of terms. Our definitions of subjects are not settled: topics included under language in one city may be included under composition or grammar in another; nature-study may include elementary science or be included with it or be linked with geography; the assignment for phonics may be separate from that for reading or included in it. Such differences point to the need of accepted definitions and authoritative recommendations on the distinctions between subjects.

[1] The only two treatments of exactly this subject which our subcommittee on bibliography was able to find were Payne's *Elementary School Curricula* (Silver, Burdett & Co., 1895) and Elson and Bachman's article in the March, 1910, number of the *Elementary School Teacher*. The Seminary plans to make a subsequent and more complete study for the sake of comparing present time allotments with those tabulated by Payne. We hope also to make comparisons of cities by groups.

In advance of all experimental determination of minimum essentials or of standard accomplishment our elementary-school practice would profit by careful analysis of the program for delimitation of fields. Interest in correlation and in the motivation of learning has kept us from distinguishing our aims with that clarity and perspective which are necessary for the most effective organization of our work. We cannot advance by avoiding distinctions. To vitalize and socialize elementary-school work we need, not less organization, but more careful organization, with clearer differentiation of subjects through more penetrating analysis of aims.

This is by no means to deny that the clearest definition of subjects would still leave us far from solving the problem of time allotments. We should still have to establish the scope of each subject. If we know what arithmetic and history mean, we do not yet know what topics each should include. At this problem school officers and teachers are continually at work, and our present effort to define minimum essentials by experiment and investigation is an essential step toward its final solution. We cannot tell how much time ought to be given to arithmetic until we know how much arithmetic is to be taught; nor indeed even then, for we must next determine how much time is necessary to reach a defined standard of achievement. This is the chief reason why a study of time allotments can be only an outpost skirmish in the fight for economy of time in elementary education.

In this report we have had to ignore fundamental differences in definitions of subjects and in their content. Choosing a set of terms generally in use, we have set down the times assigned under the chosen headings, interpreting unusual terms by reference to the courses of study which accompanied the schedules. If in a given schedule allotments were made under headings not included under our definitions, we left them out. Our percentages were reckoned on the total time given in all the schedules to certain subjects included in our list. In many cases we wrote for an estimated division of time between allotments separate on our list but combined in the schedule sent to us (e.g., physical training and recesses).

We have used an eight-grade scheme for our calculations. In the case of half-yearly-promotion systems we combined assignments for the two halves of each year to get the total for that year.

III

The headings under which we classified allotments were as follows:

1. Opening exercises, including allotments in ethics, etc.
2. Reading, including phonics, literature, dramatics, story-telling, memorization of poems, etc.
3. Language, including composition, grammar, punctuation, pronunciation, word-study, etc.
4. Spelling.
5. Penmanship.
6. Arithmetic, including algebra, geometry, business arithmetic.
7. Geography, including physical and commercial geography.
8. History, including civics.
9. Science, including nature-study, elementary science, physiology, and hygiene.
10. Drawing, including picture-study, art, etc.
11. Manual training, including industrial training, handwork, etc.
12. Physical training, including athletics, gymnastics, folk-dancing.
13. Recess.
14. Miscellaneous, including unassigned time, study.

We do not recommend these headings. We used them because we found them convenient. We plan to study the differences in content under all the headings given in the fifty cities and in others and to publish a subsequent report dealing with the headings under which allotments are made and the topics covered by courses of study.

Table I gives the total time assigned to each subject. "Total time" means the number of hours devoted to the subject in all grades. In order to get this figure we often had to multiply minutes per week by the number of weeks of school in the city in question, and reduce to hours. The total time for the whole course and for the year seemed to us the significant figures for this particular investigation. Any child progressing, without repetition of a grade and without "skipping," through all the grades in a given city would spend the number of hours on a given subject which we have called the total time for that subject in that city. The table gives the number of cities allotting time to each subject, the average total time for all the cities in which allotments to that subject were made, the lowest total time in any city, the highest, and the average deviation. It gives also the average *percentage* of time devoted to each of the "recitation-subjects" (opening exercises, physical training,

TABLE I

	Opening Exercises	Reading	Language	Spelling	Penmanship	Arithmetic	Geography	History	Science	Drawing	Music	Manual Training	Physical Training	Recess	Miscellaneous
Number of cities allotting time in any grade	45	50	50	50	49	50	50	50	47	48	49	46	46	40	28
Average total time*	269	1311	849	454	362	981	474	360	279	410	366	316	343	565	397
Lowest total time allotted in any city	116	675	119	216	244	456	202	140	54	242	135	76	40	240	39
Highest total time allotted in any city	487	2900	1267	774	533	1380	750	700	593	760	600	965	918	933	2018
Average deviation (in hours)*	71	309	163	115	62	175	103	75	106	72	58	132	120	133	237
Percentage of average total recitation time†	.....	26.3	13.8	7.4	5.9	15.9	7.7	5.8	4.5	6.7	5.9	5.1	.....	.....	.....

*Only cities allotting time considered.

† Reckoned on the sum of the averages for the indicated subjects.

recesses, and miscellaneous being omitted), reckoned on the sum of the average total times for the recitation subjects in cities which publish allotments for those subjects.

This table shows, therefore, how generally allotments are published for each subject in our list; how near the cities are to agreement as to the time needed for each subject (admitting the lack of agreement as to what shall be attempted in each); and the general trend as to division of time among the subjects.

Table II is a grade table. It shows the average total time for each subject in each grade; that is, the number of hours spent on that subject in each grade (on the average) in the cities in which allotments for that subject in that grade are given. This figure we have called the "average grade time." Where we found such a record as "Nature-study included under reading in Grades I, II, and III," we gave the whole allotment to reading, under which it was published. The table also shows the number of cities giving allotments to any given subject in any given grade. It shows the percentage of time devoted to the several "recitation" subjects in each grade, reckoned on the sum of the average grade times for the "recitation" subjects in that grade. It shows also the lowest allotment in each subject in each grade and the highest.

From Table II a roughly accurate table of average allotments in minutes per week may be derived by dividing the average grade times by 38.75, the average number of weeks in which schools in these fifty cities are in operation, and reducing to minutes.

The following conclusions concerning contemporary school practice seem to us to be supported by the facts given in the tables:

1. The school arts still have the lion's share of attention. Reading, language, spelling, penmanship, and arithmetic—five subjects out of eleven in the "recitation" group—take about 70 per cent of the time spent in strictly class work. These subjects, with history and geography, take over 82 per cent of the "recitation" time. All the cities allot time to all these subjects except penmanship, which is "incidental" in one schedule. No other group shows similar agreement. But the average deviations are larger in reading, language, and arithmetic than in any other subject except "miscellaneous." In reading, the extreme variation is noticeably large, over two thousand hours—more than two years of school life. We need standardization most in the standard subjects.

TABLE II

Grade		Subject														
		Opening Exercises	Reading	Language	Spelling	Penmanship	Arithmetic	Geography	History	Science	Drawing	Music	Manual Training	Physical Training	Recess	Miscellaneous
I	Cities allotting	43	50	47	35	47	38	6	13	37	49	49	19	43	37	18
	Average allotment*	38	266	75	54	50	60	16	27	37	98	45	42	46	87	76
	Percentage average total recitations†	...	30 6	8 6	6.3	6.7	6 9	1.8	3.1	4 3	11 3	5.2	4 8	...	...	...
	Lowest–highest*	15 – 83	100 – 570	20 – 200	16 – 180	30 – 67	16 – 180	6 – 30	9 – 50	13 – 140	20 – 95	15 – 67	15 – 100	6 – 117	33 – 120	15 – 233
II	Cities allotting	43	50	49	49	49	50	41	15	37	49	49	19	43	40	22
	Average allotment*	38	235	79	66	60	96	7	31	41	54	84	47	41	83	63
	Percentage average total recitations†	...	26 1	8 7	7.3	6 7	10 7	0 8	3.4	4 5	6	9 3	5 1	...	...	...
	Lowest–highest*	16 – 100	120 – 374	33 – 200	30 – 180	30 – 100	33 – 190	6 – 33	7 – 50	7 – 116	20 – 79	9 – 55	15 – 100	6 – 117	33 – 133	17 – 277
III	Cities allotting	43	50	50	50	49	50	36	22	39	49	49	23	43	40	21
	Average allotment*	38	188	94	73	52	131	50	35	40	56	47	40	40	83	87
	Percentage average total recitations†	...	20 8	10 3	8	5.7	14 4	5 4	3 8	4 4	6.2	5 1	4.5	...	...	...
	Lowest–highest*	17 – 60	83 – 283	33 – 188	31 – 165	22 – 100	46 – 200	10 – 117	20 – 63	9 – 100	21 – 95	15 – 75	10 – 100	7 – 133	48 – 133	19 – 383
IV	Cities allotting	43	50	50	50	49	50	49	35	44	49	49	26	42	41	24
	Average allotment*	35	153	106	67	53	149	83	57	37	53	48	45	40	77	77
	Percentage average total recitations†	...	15 8	10 9	6.9	5.5	15 4	8 5	5 8	3.8	5 5	4 9	46	...	...	...
	Lowest–highest*	16 – 83	77 – 253	40 – 178	33 – 120	27 – 80	67 – 620	25 – 200	15 – 87	6 – 80	27 – 95	18 – 75	10 – 133	7 – 117	25 – 130	3 – 357
V	Cities allotting	43	50	50	50	49	50	50	42	45	49	50	50	32	43	4
	Average allotment*	32	126	116	61	50	144	102	67	34	50	45	50	38	73	79
	Percentage average total recitations†	...	13 1	12	6 3	5 1	14 9	11 2	6 9	3 5	5.2	4 7	5.2	...	...	...
	Lowest–highest*	16 – 50	33 – 210	40 – 320	30 – 116	22 – 80	48 – 200	50 – 167	15 – 158	13 – 80	16 – 95	18 – 67	24 – 133	7 – 117	25 – 108	3 – 357
VI	Cities allotting	43	50	50	50	48	50	50	42	43	49	50	37	43	40	23
	Average allotment*	31	117	118	58	47	146	107	71	40	50	45	57	40	70	78
	Percentage average total recitations†	...	12 1	12 2	5 9	4 8	15	11	7 3	4.2	5 1	4 6	5 8	...	...	...
	Lowest–highest*	12 – 50	33 – 167	40 – 180	26 – 117	18 – 80	67 – 200	37 – 180	20 – 133	13 – 80	13 – 95	18 – 67	18 – 160	6 – 133	32 – 108	3 – 357
VII	Cities allotting	42	50	50	47	44	50	50	49	39	49	50	44	44	37	26
	Average allotment*	31	98	134	52	39	140	98	91	45	50	45	72	38	66	78
	Percentage average total recitations†	...	10	13 7	5.3	3 9	14 4	9 9	9 2	4.5	5	4 4	7 1	...	...	...
	Lowest–highest*	12 – 54	33 – 200	54 – 200	16 – 100	18 – 67	74 – 200	37 – 158	33 – 167	12 – 133	16 – 95	18 – 67	18 – 233	6 – 133	31 – 108	7 – 320
VIII	Cities allotting	43	50	50	47	43	50	34	50	44	49	49	44	43	37	22
	Average allotment*	31	97	142	51	37	142	76	117	57	49	44	74	39	66	87
	Percentage average total recitations†	...	9.6	14 1	5 1	3.7	14 1	7 6	11 6	5.7	4 9	4 4	7 4	...	...	...
	Lowest–highest*	12 – 50	33 – 200	65 – 200	16 – 100	18 – 67	62 – 210	37 – 133	37 – 216	13 – 133	10 – 74	18 – 67	18 – 253	6 – 133	31 – 106	10 – 370

* Only cities giving allotments considered.

† Reckoned on the sum of the average allotments in recitation subjects in the given grade, only cities giving allotments considered.

2. Both music and drawing have a fuller share of educational confidence than science or manual training or physical training. Each has a larger total time allotment, a larger percentage of recitation time, and fuller agreement in assignment of time, both as to the number of cities allotting hours and as to deviation of allotments.

3. In manual training and physical training the extreme deviations and the average deviations are very large, but not so large as in reading and arithmetic. There is less agreement as to allotment for these subjects, however, than for any others except opening exercises, recess, and "miscellaneous."

4. Recess takes more time than any subject except reading and arithmetic. This fact brings to mind a whole series of problems in the hygiene of the program and the management of organized play.

5. The large deviations for "miscellaneous" show how far we are from agreement on study hours, individual work with pupils, self-organized group work, and in general the use of free time, and hence of freedom by both teachers and pupils.

6. There is little agreement as to the grade and the allotment for the beginnings of any of the "accepted" subjects except reading: most of the cities, but not all, start language, spelling, penmanship, and arithmetic in Grade I. There is practical agreement to start them all in Grade II, although spelling and language do not get a unanimous vote till Grade III. Geography waits for agreement till Grade IV; for unanimity, till Grade V. History is not taught by all the cities till Grade VIII.

CHAPTER III

TYPICAL EXPERIMENTS FOR ECONOMIZING TIME IN ELEMENTARY SCHOOLS

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I

When the topic for this paper was assigned it was the intention of the committee as well as of the writer to bring and have brought together accounts of at least a fair part of all the things that are being done in the country in school affairs to the end of economizing time. It was further intended to make careful examination of all of these things and to reduce them if possible to types, describing under each type all specific instances that could be discovered. Two limitations, at least, have made so ambitious a program impossible: the one a limitation of time, the other a limitation of space. It would require as much space for such a presentation as a full *Yearbook*, and it would require some months to put the thing together, in presentable form, with due justice to each and every instance. That there is so much material has been, and is, one of the chief surprises of the investigation. It can be said without exaggeration that, consciously or unconsciously, and most frequently consciously, educators in every part of the country are doing things and planning things which will eventuate in more economical procedures and larger results.

The paper which it was planned to publish will be published in some form shortly, perhaps as "A Survey of Hopeful Progressive Tendencies in American Education." There is ample material, and excellent material too, for a chapter or even a book on this subject. This paper, however, must be limited to some general observations on the economizing of time and a brief but, it is hoped, a faithful characterization of the types to which the various experiments are readily reduced. In the first place, let it be said that all of the persons who are experimenting, and the hundred or so who have taken the trouble, often a good deal of

trouble, to respond to inquiries, are apparently impressed deeply with the belief that so far the possibilities of our education have not been anywhere near realized. Furthermore, and this is an exceedingly healthful condition, they believe pretty generally that it is not one little thing nor even some one considerable thing that is needed to make the system yield these larger results. A surprising proportion of those who have answered—easily 75 per cent—indicate more or less explicitly their conviction that all of our educational procedure will need to be examined and later adjusted, one part to another and every part to every other part, before it will produce results commensurate with its possibility. The same persons seem confident that such readjustment is entirely feasible, is even already well begun. Not many have indicated very much interest in the shortening of the period of education, but almost everyone, explicitly or by implication, would have much more accomplished within this period. The impression would seem to be that our aims for education are not far from right, that our materials, generally speaking, are not badly suited, and, with a few exceptions, that the period in which our work is to be done is about right, but that so far we have not begun to arrange these materials nor emphasize activities to the attainment of aims within the time allowed to anything like their possibilities. Fully nine-tenths of the experiments and suggestions reduce to attempts at better sequence of subject-matter, better correlation with the pupil's ability or with other subjects, more industry on the part of the pupil, more effective assistance by the teacher, and other things of the same general sort. Educators are trying to save time, not to the end of having more time for something else than education, but to the end of having more in it of education; in general, "economy of time" is but a synonym for "efficiency."

Despite the fact that the problem is not anywhere regarded as simple and that practically no one has a panacea to propose, the experiments under way, or suggested, readily reduce to comparatively few types. The experiments of each type all, or practically all, aim to do what was just suggested, namely, to make more of the possibilities inherent in materials, pupils, and teachers in the present time allotment. Apparent exceptions, such, for example, as shortening the elementary course of study one or two years, show on examination that the advocate contemplates for the pupil a longer course in school either in some trade or technical school, somewhere about the high-school age, or in professional,

cultural, or research activities at the graduate level. Almost no one indicates a wish to get the student completely out of school at an earlier age. Some would get the pupil in touch with life's activities earlier, but practically all would accomplish this either by bringing such activities more actually into the school or by taking the school (or its students) more into the midst of such activities. Again, no one seems anxious to terminate the child's connection with the schools at an earlier period. Though some of the types enumerated and some of the instances specified under the types which follow may not at first reveal their pertinence to the economizing of time, the instances have all been adduced as attempts at that end, many of them, of course, in the better-use-of-time sense.

II

BRIEF CHARACTERIZATION OF TYPES DISCOVERED

1. *Regroupings of the school years.*—The experiments under this type are numerous and include such regroupings as are commonly known as the six-six plan, the six-three-three plan, the seven-one-four plan, the six-two-four plan, the seven-five plan, and the seven-two-three plan. Closely associated with these in several instances are plans for the elimination of the eighth grade, but, on examination, in most instances there is no true elimination of the eighth-grade work. Some of it is usually found to be crowded down into the lower grades and some of it has been pushed ahead into the higher grades. Where, by this regrouping, "elementary" education is shortened, the purposes and probably the effects are the clearing of the course to some extent of nonessentials; the bringing of goals (such as graduation, the conclusion of a certain course of study, admission into a different kind of school, etc.) closer; getting pupils into intermediate or high-school work earlier; "speeding up"; keeping pupils in school longer; securing better correspondence of certain types of work with "epochs" in the child's life; dividing the work into more reasonable instalments; and providing better shunting-points that pupils may, to better advantage, change from one course or type of school to another parallel with it. According to testimony, these plans all work well, and inasmuch as the differences between them are not so great after all, especially at what may be regarded as the crucial point—the seventh and eighth grade—we may predict that some one of them, probably the six-three-three plan, will soon take a decided lead over the others and the present eight-four plan.

2. *Modifications of grading and promotion schemes.*—A great many schools are trying out grading and promotion schemes, in general by making more subdivisions of the year grade, such as half-year grades; term grades (usually twelve weeks); quarter-year grades; and no grades at all, that is, ungraded sections; "quick" and "slow" sections. Promotions, in most instances, are possible at any and all of these grade divisions; and over and above that, in some instances, by subjects, on the basis of special examinations; and for work carried "with honor." The purposes specified are: bringing goals closer; spurring the pupil to his best by competition with his own record, with the records of his school and of other schools, and with his fellows; making it possible for each pupil to find the pace best suited to his health, ambitions, or peculiarities; making possible a change of pace, without serious inconvenience, on occasion or necessity. Enthusiastic reports of good results are the rule in connection with this type of experiment, and there can be little doubt that much has been done and will be done in these ways to accommodate the individual pupil and to bring into education more effectively one of the greatest factors in any improved efficiency scheme—competition.

3. *Rearrangements and eliminations of subject-matter.*—These experiments might almost be classed as of two different types—rearrangements and eliminations—were it not for two facts which examination of them reveals: that the two are always complicated in any specific instance and that as a rule there is no real elimination, but rather minimization, transference, or substitution; for example, a topic may drop out of arithmetic but reappear, in modified form, in geography. It is difficult to characterize the experimentation of this type for the reason that it is going on in all of the subjects and in all of the grades. Perhaps the most salient thing to be noted is that a challenge of its right to its place and emphasis is being put to every subject and topic. Another salient characteristic is a search after logical and psychological sequence, correlation, and subordination. The aims most frequently specified are: to relieve the pupils of dead and uninteresting occupation; to employ them with things of which they can see the importance; to avoid cluttering their minds with bric-à-brac of curious and antique sort; to compensate for paucity of detail by clarity of outline; to secure the study of subjects at more favorable periods of the pupil's development; by correlation and concentration to "kill two birds with one stone."

4. *Extra-time and emphasis schemes.*—Extra time is provided for in after-school classes, special classes, evening schools, summer schools, and by ingenious adjustments in some instances which permit the pupil to emphasize his more difficult subjects in time taken from easier ones. The purposes of these experiments are variously specified as: giving the pupil a chance to keep up by means of extra work instead of falling behind; to get ahead in time or power if he choose; to maintain during interschool periods (for example, in the summer) a hard-earned momentum; to keep pupils in the spirit of school work; to save time that otherwise would have to be given to the warming-up process. Some of the most hopeful reports of progress have been given in connection with these innovations. In some places the whole spirit of schools and community would seem to have been changed. Comparison with European school systems, especially those of Germany, France, and Switzerland, tends to force upon us the conviction that so far we have not made enough of our schools in a time way, that is, they do not take up enough of our time, are not in our lives enough; modern industrial conditions no longer very generally justify numerous and long vacations. We are realizing more and more that education is not an incident of life, but, instead, a very large part of it. More than that, we are beginning to realize, when we think in world-terms, that preparation for the world's work cannot be made in brief and intermittent attacks.

5. *Tying the school up with the life and occupations of the community.*—This sort of thing is reported from every part of the country and usually as though it were (as it is) the discovery of the times. It takes on many forms, such as allowing credit for non-academic exercises in school-time; allowing credit for work done at home or in the shop or store; arranging for industrial work in connection with school work; introducing into the school the study of community phenomena; interesting the home, church, press, and other institutions in the school's activities. The reasons alleged are that these things make for greater attractiveness of school life, for insight into the relationships of school and life, for fuller occupation of the pupil's powers, for the larger power that comes through versatility. There can be no doubt that, rightly administered, all these advantages obtain and that all of the arguments urged in favor of extra-time schemes apply equally well here; in fact, these are the ways, to quite an extent, in which to expend extra time.

6. *Modifications of recitation, assignment, and study schemes.*—These instances are almost as numerous as the schools of the country, and the substitutions proposed for present usages are of every degree of ingenuity. That there are enormous unrealized possibilities in the contact of the pupil with the teacher and in the exercises in which the pupil engages, or should engage, seems to be a profound and widespread conviction. The more common instances reported are such as the setting aside of a part of the recitation period for supervised study; devoting different recitations to different and carefully discriminated uses, such as reviews; preparation for future lessons; application of principles to problems; giving pupils assignments of a degree of difficulty adjusted to age and experience—all to the end that the pupil may come to acquaintance with, and use of, his mind; acquaintance with, and respect for, the minds of others; capacity to express himself on short notice. All these and many more are legitimate aims of the recitation, the study period, and various less formalized school exercises. The agitation in this field is a matter of immense promise. We have long said that it is not what one does that counts so much, it is the manner in which he does it. We still more than half believe (the wish being father to the thought) that there is a good deal in formal discipline. Now that we are really looking into the possibilities of teacher-pupil and pupil-school contacts, we may expect to realize something as good as if not better than the things which formal discipline, were it a possibility, would give us.

7. *The training of superintendents, principals, and teachers for expert service.*—Here again the air is full of hope. Teacher-training institutions are seriously, and as never before, considering just what goes into the make-up of the successful teacher. The teacher is being analyzed out to his ultimate constituents. He is being thought of no longer, or at any rate not so much, in a sentimental way. He is an expert. His function is to help children to learn—to become. He is thought of as immoral if he wastes time or permits it to be wasted. He is being held almost universally to a more strict account than even the minister. A great many of those who report see in the teacher the key to the whole economy problem. He is the inspirer, the technically trained adviser, as well as and more than the taskmaster. Not only are certification requirements and plans for such requirements stipulating more in detail the teacher's qualifications, but numerous provisions are being made and

advocated for the improvement of teachers while in service. To make the teacher's profession one of dignity and worth could well be one of the most practical objectives in the campaign for wise economy of time; in fact, and obviously, no advanced ground can be taken and held without the dependable teacher.

8. *Measurement and appraisal of results.*—This is presented last, not because least in importance nor because less frequently mentioned, but rather because everything else is, in a way, dependent upon it. School people are trying everywhere, some with scientific insight and some without, to estimate the outcomes, the results, following upon their hard work. There is general, wholesale, and wholesome suspicion of ritual in education and conventional justifications of ritual. It is quite unnecessary here to mention the proposed tests and measurement scales with which we are all familiar, or the surveys which are being undertaken or have been completed in all parts of the country. It may not be irrelevant to call attention to the fact that even the rank-and-file teacher is beginning to talk in terms of surfaces of frequency, the personal equation, etc., and their relations to the marking system, and that even in remote places the superintendent or principal is discussing such matters in teachers' meetings. From the movement for standards and measurements it is expected that we shall be able better to say just what is being done, just what each is doing, so that the educator shall be guilty neither of too much nor of too little endeavor, that one pupil may be rated accurately with reference to another, that one school may be rated accurately with reference to another, that one teacher may be rated accurately with reference to another, all to the end that competition may be intelligently and effectively encouraged.

Some other types of "progressive experiments in economizing time" appear in the returns, but will not be discussed in this paper. One other at least ought to be mentioned—the general campaign for improvement of the health and "condition" of pupils—and its mention is probably sufficient to bring to mind its intimate and enormously important relation to any true economizing of time.

III

These gleanings, which are here so broadly sketched, seem to the writer to accord perfectly with the view expressed in the first section, that, essentially, the problem of economizing time in education in the

mind of the American educator reduces simply to making *better use* of time. Few persons, we take it, will be found who think that we have not time enough in which to do the work of education, and quite as few, probably, who think that the material, the subject-matter, available for education is not adequate. We have the things to do with and we have the time in which to do; we are doing pretty well as it is; but we are trying to do better—to use the materials we have, in the time we have, for the production of *better results*. We ought not to be in doubt as to the nature of these results; the very purpose of "America," its democracy, indicates as the duty and the program of education in America: *to raise the levels of skill, intelligence, and character in as many as possible, as high as possible, as soon as possible.* This is our aim of education, and this is why we should economize time.

To economize time it is required that the right persons, under the right leaders, shall use the right materials, at the right time, in the right way. The right persons are those who are in "condition" to work and who see that the work they are doing is pertinent to the attainment of reasonably immediate and attractive goals. The right leaders are those teachers, principals, superintendents who are clear as to the purpose and worth of life, who believe in life, and who are possessed of the appropriate knowledge and technique. The right materials are such exercises as will lead, and *can be seen by those who take them to lead*, definitely, and with fair directness, to worthy and desired goals. The right time is early—before the edge of interest is dulled—before irrelevant habits are formed. The right way is industriously, competitively, cheerfully; with as much freedom as possible from distraction; with occasional refreshment and reanimation.

The right carrying out of such a program requires the further segregation of its elements. It is necessary to see clearly the particular matters administration must work with and upon, that emphasis and correlation may be intelligent. It is necessary to figure out just what are the *means* of improvement—of economy. We shall not be far wrong if we say we are economizing or getting in a way to economize wherever we are really securing one or more of the following: (1) better "condition" of pupils; (2) more definite, attractive, and immediate, as well as distant, goals; (3) a course of study more pertinent in content and more psychological in sequence; (4) wiser, more tactful, and more human teachers; (5) a student-body more devoted and industrious, as well as

cheerful; (6) a completer elimination or minimization of distractions; (7) more timely beginnings in all activities; (8) more industrious prosecution of work; (9) keener competition of the pupil, with himself and with others; (10) saner refreshment and reanimation of pupils.

That these are the *means* to a higher educational efficiency—to the economizing of time—and that they are believed in by American educators, is made to look probable by the fact that practically all attempts, of which we have learned, to improve things, in whatever part of the country, readily appear as attempts to accomplish one or more of them. These attempts are various—are undertaken sometimes with more, often with less, vision of the whole problem, but all of them are earnest attempts and may be called, in the best sense of the term, "experiments" in economizing time.

PART III

MINIMUM STANDARDS AND CURRENT PRACTICES IN THE FORMAL SUBJECTS

CHAPTER IV

READING

INTRODUCTORY NOTE

The word "reading" is here used to include the formal aspects of oral and silent reading. The content aspect of reading is discussed in a later chapter on literature. The determination of the minimum essentials in reading involves two problems, one the determination of standard vocabularies and the other the determination of standard rates of reading. One of these is discussed by Mr. Jones and the other by Mr. Courtis. In view of the active scientific experimentation and investigation that are being carried on at the present time in the subject of reading, a select bibliography by Mr. Gray is provided in order to introduce the reader to some of the more recent experiments.

SECTION I

STANDARD VOCABULARY

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In devising a standard test for primary reading one of the first tasks is the determination of a standard vocabulary. There are two possible ways of determining such a standard vocabulary, and it appears that both ought to be used. In the first place, the vocabulary should be one that is fundamental to childhood itself; it should be composed of the words most commonly used by children of the primary grades. On the other hand, words belong to phonetic families and the mastery of one word of a family provides a key for unlocking the mysteries of all the other words of that phonetic family. Consequently, words should be

chosen so as to open a way to an understanding of all of the larger phonetic families. These two bases of choice of words for a standard vocabulary are not contradictory, since the largest phonetic families are usually the ones that furnish the most words to the vocabulary of childhood.

In determining the vocabulary that is thought to be common to childhood, an analysis was made of the vocabularies of ten primers in common use. The words were tabulated in two lists, one called the phonetic list, and the other, the sight list. In the phonetic list were tabulated all of those simple English words that belong to the 150 common phonetic families. These are mostly words of a single syllable. In the sight list were tabulated various irregular words that do not employ one of the common phonograms, and most words of two or more syllables.

Table I shows a part of each of these two lists. The words given are arranged in the order of the frequency of their occurrence in the ten primers analyzed. The figure before each word indicates the number of times it occurred.

TABLE I

Phonetic Words		Sight Words	
704	and	1,733	the
502	little	965	I
478	it	853	is
420	in	652	to
395	can	553	a
385	not	526	my
338	play	524	you
309	like	449	said
213	boy	389	see
206	ball	334	do
192	hen	331	he
178	run	315	we
176	that	278	have
176	up	277	come
170	now	237	me
169	big	224	are

Each of these two lists continues downward until it arrives at words that occur but once in the ten primers. In the phonetic list there are in all about 530 different words, and in the sight list about 430. Naturally these 960 words cannot be employed as a standard vocabulary.

It is necessary to take out the common elements from all of the primers. If one chooses from the sight list all of those occurring ten times or more, one has a list, not of 430 words, but of about 190 words. In selecting from the phonetic list the problem is more complicated. It is desirable to consider the frequency of recurrence of words, but at the same time it is desirable to consider the size of the phonetic family to which each of the words belongs.

In the solution of this complicated problem the first step was to determine the number of different words in common use belonging to each of the various phonic families. A mechanical word-building method was employed for gathering in all of the words belonging to each of the 150 common phonic families. To illustrate the matter, in Table II the middle column shows the phonic word-base. The column of figures to the left shows the number of words belonging to the phonic family using that particular word-base. The column of figures to the right shows the number of times any word occurs in the ten primers employing this particular word-base.

TABLE II

9	and	831	15	ank	49
13	an	622	16	ag	44
17	at	433	10	ang	22
8	am	164	5	ant	10
15	ack	130	15	ash	4
8	atch	117	5	ax	2
17	ap	104	8	ab	1
13	ad	78	8	amp	1

In actual practice it has seemed most convenient to keep the two lists of words separate. In drawing up a test of the ability of pupils to recognize the sight words one simply makes a random sampling from that portion of the list showing a frequency of ten words or over, each word in the test having a value equal to the frequency of its recurrence in the ten primers. The test of the phonic vocabulary is made up by taking a random sampling from the phonic list. The value of each word, however, is represented by the sum of the recurrences of all words of that phonic family in the ten primers. While the value of each word for test purposes of the sight list remains the same as shown in Table I, the values for the phonic list are as shown in Table III.

TABLE III

1,101	hit	395	pen
831	band	391	hall
739	say	359	gun
622	can	315	pig
611	fill	309	like
541	tin	253	red
489	cow	252	wet
433	cat	242	cup
426	not	228	thorn
403	make	228	kick

This list continues down to the point where the word-values are only ten. In making up any given test all the words belonging to the same family as "hit" have the same value, namely, 1,101. This includes such words as "it," "bit," "sit," "kit," etc. Because of this, while there are only 118 word-families having a phonetic value of ten or over, yet there are in fact several hundred available words.

In actual work one can use the two standard vocabulary lists and make separate tests, or he can choose words from both lists and make a single composite test. The test may be made by using lists of words for the pupil's recognition, or the words may be built into sentences and read by the pupil. Both plans are in fact used. Table IV on pp. 41 and 42 shows a list of words that was used in testing the first-grade class in two different ward-school buildings and the results of the test. A card on which the words were printed in primer type was placed in the hands of the pupil and the teacher had in her hand a card similar to the one shown in the cut. On this card there are twenty columns. Ten pupils are chosen by taking alternate pupils. Since this is a random sampling the results represent fairly well the ability of the class and the efficiency of the teacher. As the first pupil pronounces the words of his list, the teacher checks in column I on her card the word upon which the pupil fails. The column then presents a fair picture of the pupil's ability to recognize words of primer quality. The second column represents the ability of the second pupil, and so on through the ten chosen to represent the class.

The table shows that in school A the pupils are well graded. All do about equally well. Apparently a few word-families have not been taught. With the exception of these, practically all of the words of the

TABLE IV

First Grade

		School A										School B									
		Pupil										Pupil									
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
622	man																				
104	cap																				
130	back																		o		
22	hang																		o		
44	flag																				
831	hand																				
117	catch																				
1	lamp																				
49	thank												o		o			o	o	o	
1	tramp																				
78	bad																		o		
433	hat																		o		
2	wax																				
731	gray																		o	o	
16	tail																		o		
11	pale							o				o			o						
403	cake																				
40	main							o		o											
6	cape	o	o	o	o	o	o	o	o	o					o				o		
82	spade	o	o			o	o		o	o											
40	plate		o												o			o	o	o	
2	table	o	o	o		o	o			o											
8	pane	o	o	o		o	o	o	o	o								o	o	o	
20	care	o	o	o			o			o											
252	get																		o		
253	bed																		o		
186	tell															o					
395	hen																				
4	mend						o								o				o		
4	begs																		o		
6	best		o							o				o					o		
34	dress																				
128	read														o				o		
17	feel		o				o			o								o			
204	beat		o				o			o						o	o	o	o		
65	dear																o	o	o		
25	been															o	o	o	o		
1,101	bit																o				
611	still																		o	o	
132	hid		o			o													o		
138	bring																	o	o	o	
228	stick																		o		
541	pin																		o		
70	drink																				
315	dig																	o	o		

TABLE IV—*Continued*

		School A										School B									
		Pupil										Pupil									
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
4	mix																				
35	whip																	o	o		
4	rib												o		o		o	o	o		
140	swim																		o		
40	dish																		o		
64	side		o							o			o		o				o		
87	might	o					o		o												
15	high												o						o		
89	mind	o	o				o			o		o						o	o	o	
2	pipe																		o		
91	five																				
309	like																		o		
7	smile																				
80	rock												o					o			
426	spot																			o	
90	top																				
12	sod																	o	o		
3	toss																				
116	told																				
13	nose																				
76	boat												o						o		
26	rope																	o	o	o	
16	tore																				
359	run																				
1	jump																				
242	up															o					
11	rub																	o	o		
130	dame																	o			
8	pane														o	o			o		
31	Grace									o				o			o		o	o	
17	street																				
95	keep																	o	o	o	
35	seed																		o	o	
26	week												o				o	o	o	o	
5	push																				
122	write															o			o	o	
44	fire															o			o		
43	time																		o		
45	full						o											o	o	o	
135	but						o												o		
102	duck																		o		
11,698																					

list are recognized by all of the pupils. School B is shown to be of a quite different character, although supposed to be doing exactly the same type of work. Apparently all of the word-families have been partially taught, but none of them has been taught well. Certain pupils make a high mark; others, one that is very low. Apparently the teacher is inefficient. Those who learn without much teaching have mastered the words; those who have special difficulties and require careful teaching have not mastered the words. The class is badly balanced as a consequence.

One objection arises in connection with this mode of making the test—the words in the list are not in their natural setting. A pupil might fail to recognize a word that stands in isolation in the list and yet be able to recognize that same word if he met with it in sentences that he was reading. For this reason the tests have been made up into sentence-forms and printed as reading-lessons. The pupil instead of reading down a list of words reads what appears to him to be a usual reading-lesson. The teacher, however, has a card in which the words are arranged in a column as in the other case, and she checks the words missed by the pupils in just the same manner.

In marking the individual pupils, or in marking the teacher, it is necessary to take into account the relative value of the word as shown by the figures indicating the frequency of its recurrence. It is a greater error for a pupil to miss the word "man," which has a recurrent value of 622, than it is to miss the word "cap," which has a recurrent value of only 104. In the test shown on the accompanying figure the total recurrent value of all the words was 11,698. This is the figure that will be received by a pupil in case he recognizes every word. This is the figure that will represent the efficiency of the teacher in case every pupil recognizes every word of the test. In making up the record for either pupil or teacher it is necessary to deduct from this total sum the sum of all of the words missed. The remainder is a coefficient of ability to recognize the words of the standard vocabulary by the pupil; and an average of these remainders is a coefficient of efficiency for the teacher.

SECTION 2

STANDARDS IN RATES OF READING

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The widespread interest in the movement for measurement in education is rapidly giving many investigators a new point of view. Measurement invariably leads to closer analysis and to a truer perception of the relative functions and worth of different phases of the work of any one type. It is not surprising, therefore, that in education the "yardstick" men are seeing more and more clearly that both the materials and the technique of teaching must be varied according to the results to be secured.

In a lesson designed to increase a child's appreciation of a great poem, for instance, a situation must be developed with a group of children, and the individuals of the group stimulated to react to the situation in such a way that each personality may make its own peculiar contribution according to its own peculiar interests and point of view. The lesson is successful only as it produces results which vary from individual to individual.

On the other hand, in a lesson designed to increase the child's mastery of the technique of reading, the work to be successful must eventually result in the attainment of a proper degree of skill. In such lessons the amount and character of the training each child receives must be varied according to his individual peculiarities and capacities, but the final product with all children should be the same. The uniformity of the product is here the chief characteristic of successful teaching.

The purpose of this report is to describe the results and conclusions reached in a first attack upon the problem of determining standard scores in some of the measurable elements that make up skill in reading. It is evident that before a uniform product can be secured there must be both an absolutely definite statement in objective terms of the goal to be reached, and a means of measuring the product at various stages of the process, to tell whether or not the goal has been attained. The two educational principles involved in such standardization may be concisely expressed as "definition of aim," and "limitation of training." Each will be briefly discussed before taking up the consideration of the experimental results.

Definition of aim.—It is the contention of the writer that, where the product is a mechanical skill, for successful teaching there must be a definite aim, and with this general statement probably few would quarrel. It is only as an effort is made to formulate the aim that difficulties arise in the minds of teachers. The general statement that schools should teach a child to read arouses no antagonism. But the "yardstick" men are not satisfied with such a statement. What does "to read" mean? Does a child know how to read who in half an hour is barely able to finish 100 words of simple prose, even if at the end of the time he understands perfectly all that he has read? Most courses of study say simply that a child should be able to read with a reasonable degree of skill for his grade. This investigation is an attempt to define the degrees of skill that are actually produced at each grade by present training.

The most evident measurable elements in skill in silent reading are the number of words read per minute and the degree of assimilation of the content. The first is easily measured, the second only indirectly through some form of reproduction. This introduces several foreign factors, and makes measurement and interpretation difficult. The most valuable product of the present study is, therefore, the knowledge gained as to the median rate of silent reading in the different grades. Accepting the median rates for each grade as the optimum rates, these results furnish the definite aims desired.

It should constantly be kept in mind throughout the discussions that follow that the study is suggestive only, its conclusions tentative. It represents an unsuccessful attack upon a complex problem, and its results are given here in the hope that it may lead others to check the conclusions reached and to repeat the work under more favorable conditions. Its chief value must be that it shows plainly the need of further studies of the same kind, and it furnishes tentative standards which will serve as a basis for experimentation on the part of those teachers who care to attempt the improvement of the efficiency of their teaching. It at least uncovers a problem whose solution would be of direct, practical, and lasting value, and it should serve to bring the question of objective definition of aim before those who have to do with the formulation of courses of study.

Limitation of training.—Anticipating somewhat the statistical data of the article, it may be said that the results show two striking characteristics: a great range of individual variation in every grade and a

constant average rate for any large group of a given grade. The great range of individual variation is a sign of inefficient teaching. In every grade there are some children who read very slowly or with great difficulty, and there are others who read very efficiently and at high speed. As there seems to be a well-marked value for average adult skill, it is quite probable that this represents the optimum rate at which the neuro-muscular co-ordinations involved in reading normally take place. If so, it is the duty of the elementary school to see that each individual attains this degree of skill. Otherwise he does not know "how to read." Moreover, the elementary school need not concern itself with the development of higher degrees of skill. As soon as the average adult rate has been reached, all time spent in *direct drill* tending to produce additional degrees of skill is likely to be waste. The bases for this statement are four: (1) By analogy from arithmetic, in which direct objective data for a similar statement have been secured, it is possible to say that after the optimum degree of skill has been attained *further development of skill* in reading is probably not a factor in determining the social efficiency of the individual, so that his time will be more profitably employed in other types of training; (2) individuals with greater natural capacities will reach the optimum level of ability with much less training than individuals less favored by natural inheritance; consequently for such individuals drill soon ceases to have any meaning, and may be positively harmful; (3) the development of higher levels of ability in preparation for a specific vocation is not the function of elementary-school training; (4) for the exceptionally able child the incidental training which comes through the use of any mechanical skill in real work—once the standard has been attained—will automatically develop his ability to higher levels without further direct drill, but it is the exceptionally able child *alone* who is thus able to profit by incidental training. Under such conditions it would seem wise to determine experimentally the optimum degree of skill needed by the average man, and deliberately to limit the training given by the school to the attainment of these standards. This implies, of course, a new form of schoolroom administration, one that will permit the shunting of an individual out of the training-class as soon as the required skill has been attained, and the putting of that skill to work in applied problems tending to develop the initiative and executive ability of the individual. As the experimental work of a few advance schools proves that such an arrangement

means a vastly increased efficiency of teaching, as well as a great improvement of the ultimate product, it is only a question of time before the principles of "definition of aim in objective terms," with consequent "limitation of training," will meet with general acceptance. In spite of its limitations, the results of the present study furnish tentative standards for a first experimental attack upon the problem of handling the teaching of reading from this point of view.

Turning now to the definite experiment to be reported, the tests will be described, a summary given of the results and conclusions reached, and a few suggestions made as to the value and use of the standards proposed.

The investigation of the rates at which children read was part of a larger co-operative investigation of the development of several of the abilities involved in training in English, and was carried on on a co-operative basis, following the general plan used by the writer in arithmetic. The tests were sold at cost to those who promised to send in duplicate copies of their results. Owing to the length and difficulty of the scoring, however, very few really sent in returns, and the standards are not as reliable as it was hoped they would be. The writer, however, is glad to acknowledge his indebtedness to the following: Miss E. M. Liggett, the Liggett School, Detroit, Mich.; English Committee, Teachers' Association, Detroit public schools; Mr. Charles M. Lamprey, Boston public schools; Professor Cyrus D. Mead, University of Cincinnati; Mr. D. F. Carpenter, superintendent of schools, Littleton, N.H.; Mr. H. L. Smith, superintendent of schools, Bloomington, Ind.; Miss Flora Wilber, City Normal School, Fort Wayne, Ind.

In this series of English tests, test No. 2 was the writing from dictation the first part of a simple story about a picture. For the third test the children were asked to compose the continuation of the story. When this was completed, they were given the real continuation of the story printed in 10-point type in lines 5 inches long, approximately 6 lines to the inch. The first section of the story (Part B) was 386 words long, and the children were glad to read it, to see how closely the "real" story agreed with the one they had written. They were asked to read at their natural rate, and all started at a given signal and were stopped at the end of one minute. A line was drawn around the last word read. This test will be called a test of normal reading. Immediately following this the children were measured as to their ability to remember whether

Name ..... Grade .....

BESSIE'S ADVENTURES. PART B.

	No. of Words
Before the frightened little girl could decide what to do, the dog sat up on his hind legs and began to beg. He gave another impatient little "Bow!," but this time his bark did not seem so sharp and terrifying to Bessie, and her fears began to disappear. "Why, he's really a cute little doggie," she thought, and sitting up, she timidly offered him her bowl. The dog needed no second invitation, but eagerly lapped the milk until every drop was gone.	18 32 47 60 73 86
Bessie set the empty bowl down upon the doorstep and patted the little dog's head. He in turn was equally friendly, wagging his tail and trying to lick her hand. In a few minutes more the two were the best of friends, racing about the garden in a wild game of tag. Sometimes it was Bessie, laughing and screaming, who was chasing the dog this way and that in and out among the bushes of the garden; sometimes it was the dog, barking and jumping, who was chasing Bessie. More than once dog and girl were so much in each other's way that both fell down, rolling over and over on the soft grass. Not for a long time had Bessie had such a pleasant playmate.	99 113 128 142 156 170 183 198 212
They were on the front lawn now, resting a minute after a particularly wild romp. Suddenly, through the pickets of the fence, the dog spied a cat crossing the street outside. Immediately he dashed after her, squeezing between the pickets, and running down the street at top speed. "Here, doggie, doggie," the little girl cried, and ran after her playfellow, only to be stopped by the fence. From between the pickets, she could see both the cat and the dog rapidly disappearing down the street. Hot tears of disappointment welled from her eyes. She hurried to the gate and shook it; it was securely latched. Could she open it? Many times before had she tried, but without success. Little girls grow, however, and standing on the lower part of the gate, and stretching to her utmost, she was just able to press her little fingers against the latch. Click, and the gate swung open. Bessie was free to hurry down the street. The cat and dog had disappeared around the corner of the next block.	225 239 249 261 275 289 300 314 325 337 353 366 379 386

FIG. 1

Name .... Grade ....

No. of Words

BESSIE'S ADVENTURES. PART C.

Once out of the yard, Bessie ran straight down the street as fast as her 19
two little legs would carry her From the corner around which the dog and 33
cat had disappeared, she could see, half way up the block of the cross street, 48
a dog barking furiously at the foot of a tree. So Bessie ran in that direc- 63
tion, getting quite out of sight of her own home. When she drew near, 77
however, she stopped running and stood gazing at the dog in dismay. Her 90
cute little playfellow was nowhere to be seen. This dog was larger and 103
darker, and his voice was loud and savage. What big teeth he had! How 117
viciously he growled and snapped at the cat up the tree! 128

Suddenly a sense of loneliness oppressed the little girl The world 139
seemed big and strange; she must get back to her home and her mother. 153
She turned and started to run again, making for the corner. A great auto 167
truck thundered by, blowing its horn loudly. A group of children jeered 179
at her, and a small boy tried to block her way. Bessie reached the corner 194
at last but, confused, bewildered, she turned in the wrong direction. 205

On and on she ran, finding nothing but strange houses and unfamiliar 217
scenes. A suspicion that she was lost flashed across her mind and filled it 231
with terror. The suspicion grew to a certainty. She *was* lost! She would 244
never see her mother any more! In a dumb agony of terror the little girl 259
sank helplessly upon the nearest horseblock, then gave way to a storm of 272
sobs she could no longer restrain. 278

SCORE
Number of
Words ....

English. Test No. 5. Careful Reading.

R R R

"*Measure the efficiency of the entire school, not the individual ability of the few.*"

FIG. 1

or not certain words had been used in the story. Next they were given a third part of the story, but this time were told to read the same carefully, so that they would be able to reproduce what they had read. Again the conditions of starting and stopping were carefully controlled, and the time allowance was one minute. A line was drawn around the last word read. This will be called a test of careful reading. The scoring of the amount of the material reproduced proved long and tedious, and very few data on this point are available. This study will deal wholly with the speed of reading, and it should be clear that this is done, not because quality of understanding *is unimportant*, but *of necessity*. A copy of the material of these two tests is shown in Fig. 1.

Not all the individual scores were returned, so that Table I, giving the median rates per grade, was made up both from 132 class medians

TABLE I

MEDIAN CLASS AND INDIVIDUAL SCORES BY GRADES

GRADE	TEST 4. NORMAL READING						
	Class Scores			Individual Scores			Standard
	No. of Scores	Median	M.D.	No. of Scores	Median	M.D.	
IV	26	165	15	291	161	48	160
V	29	173	32	358	180	52	180
VI	29	215	22	304	226	52	220
VII	26	252	24	256	256	52	250
VIII	20	235	30	163	262	60	280
Adult	2	316	.....	97	317	70	320
Total	132	.....	.....	1,469	.....	.....	.....

GRADE	TEST 5. CAREFUL READING						
	Class Scores			Individual Scores			Standard
	No. of Scores	Median	M.D.	No. of Scores	Median	M.D.	
IV	26	126	20	328	106	36	110
V	29	136	26	364	133	50	130
VI	29	169	30	277	172	44	160
VII	25	188	30	256	178	48	185
VIII	20	205	40	163	200	50	200
Adult	2	172	.....	90	184	58	200
Total	131	.....	.....	1,478	.....	.....	.....

representing about 3,000 children and from the distribution of nearly 1,500 individual scores. The class results, however, agree closely with the medians derived from such individual scores as were secured, and it is probable that these values would not be greatly changed had a larger number of scores been available.

The results of Table I are shown graphically in Fig. 2, and over the heavy line representing the medians of the grade medians has been

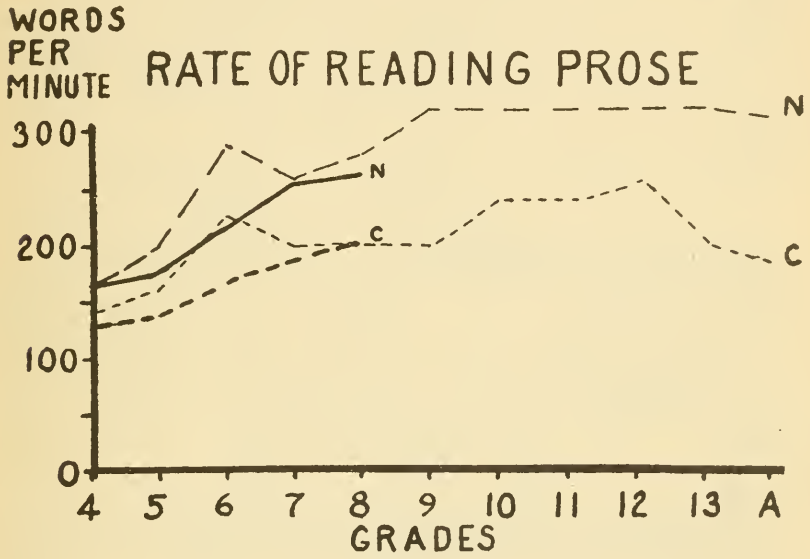

FIG. 2

drawn the record from a single school and from a group of adults. Taking up the class scores first, it will be seen that there is a steady progress from Grade IV to Grade VIII, fairly constant from the fifth grade on. The final value approximates closely the average adult score, if allowance is made for an eighth-grade drop in Test 4.

The curve in light dotted line represents the results from a private school for girls. Note that the curves for both normal and careful reading are irregular, owing to the exceptional performance of the sixth-grade class, but if this class be disregarded, it will be seen that the steady progress through the grades reaches adult speed at the ninth or tenth grade and afterward does not vary widely from these constant values.

This suggests that a value of approximately 320 words per minute for rapid reading and 200 words per minute for careful reading represent adult ability and the general limit of productive training. Ability to scan a passage rapidly and ability to read and understand—to read in order to retain—as developed by direct training, would not need to rise above the limits given. The scores given in Table I may well represent

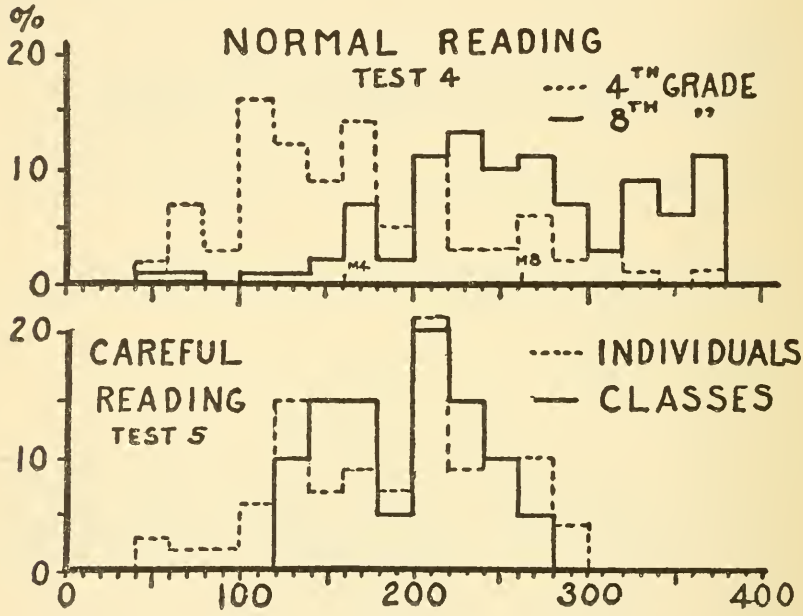

FIG. 3

standard scores toward which to work. The actual standards given in the table were obtained by smoothing the development curves derived from the median scores.

A significant feature of the results is the wide distribution of individual scores and the narrower range of class scores. In Table I compare, in both tests, the median deviation (M.D.) for class medians with that for individual scores. In Table II the distribution of 163 individual scores and of 20 classes, both eighth-grade, are given for comparison.

Fig. 3 shows the comparison graphically. This difference between the two distributions shows that the same conditions exist as in arith-

metic, and that the same forces are at work; in other words, that the most important factor to be controlled in teaching children to read is the factor of individual differences. In Table II, also, is given the distribution of individual scores of fourth-grade children and of adults. Note that even in the fourth-grade median adult speed is attained by a few individuals, while among adults some fall below the median fourth-grade rate. This tremendous range of individual variation is proof that in the teaching of reading the school at present has little control over the product. Experience shows that control is possible if a definite task is set before each child and he is allowed to reach the goal in his own way. The table and the results it expresses make it possible to say that only as standard practice tests are devised which will enable a teacher to handle a group of children, yet let each child grow in his own way and progress at his own rate, can the teaching of reading be made much more efficient than it is at present.

Uses of the standard scores.—The primary value of standard scores has just been indicated: they give the information needed for the construction of standard practice tests, for the development of standard skill in reading. They also serve the teacher as a guide in the assignment of lessons. It is a simple matter to estimate by means of the number of words in a line and the number of lines on a page the length of time it will take to read over once a passage in a textbook. The writer has before him a textbook with approximately 260 words to the page which was assigned for close study by adults at the rate of about 20 pages a day. As each page would require on the average a little more than a minute to read over once; to read the assignment through three times would alone take up the allotted hour of study, to say nothing of the time required for collateral reading, analysis, digestion, and use of the material gained in solution of problems. Reading and reference lessons are too often assigned without regard to the time required to read the material over thoroughly, with a result that children are soon confirmed in the habit of hasty reading without assimilation. Teachers everywhere, following the general method of this study, should determine the average rate of reading of their classes in the various types of textbooks used by their pupils and assign all reference reading with such standard rates in mind.

Diagnosis.—The child whose rate falls below the standard for his class is in need of special assistance. The causes of faulty reading are

TABLE II

Distribution of Individual Scores

	Number of Words Read per Minute																				Total Number of Scores	Median Scores
	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380		
Grade IV—																						
Test 4	...	1	6	21	9	46	34	26	42	14	33	9	10	17	6	7	0	2	1	7	291	164
Test 5	8	27	40	30	45	50	52	19	22	12	14	4	1	4	...	...	...	...	...	...	328	106
Grade VIII—																						
Test 4	...	...	1	2	0	1	2	3	11	3	18	22	17	18	12	5	15	6	9	18	163	262
Test 5	...	...	5	3	3	9	24	12	15	11	27	15	16	16	7	...	...	...	...	...	163	200
Adult scores—																						
Test 4	...	...	...	...	...	...	1	1	4	3	3	8	8	6	9	7	7	6	6	28	97	317
Test 5	2	0	...	2	4	3	19	8	5	9	10	3	5	20	...	...	...	...	...	...	90	184
Class scores, Grade VIII—																						
Test 4	...	...	...	...	...	...	...	...	3	0	4	4	2	4	1	1	0	1	...	...	20	235
Test 5	...	...	...	...	...	...	2	3	3	1	4	3	1	2	1	...	...	...	...	...	20	205

many, not one, and the remedy to be applied differs from individual to individual. The child that has not learned to read a line with but three or four movements of the eyes must be given special training to acquire this necessary habit. The child unable to grasp a strange word needs a different treatment. The child slow in his reaction times will benefit by still a different training. But only as these special types of training are provided will the children showing the different defects be able to profit by the ordinary classroom work to the extent the effort of the teacher would warrant. Standard scores in standard tests serve then to point out the children in need of special individual study by the teacher.

Supervision.—Standard scores are also of value from the point of view of supervision. The superintendent or supervisor cannot tell what is done in a room when he is not present. The temptations to misuse the school time are so many and the difficulties of keeping work evenly balanced so great, that even the best of teachers may vary widely from the course as outlined. Where standard tests are given, however, it becomes possible to express the results of the teaching effort in terms of efficiency, if efficiency be defined as the percentage of the total product that comes up to the standard. If of a sixth-grade class of 50, 20 children prove able to read at the rate of 200 words per minute in a final test in June, while in a similar class of the same type of children 40 are able to read at the given rate, the differences must be sought in the work of the two teachers. The advantages of standard scores are that they both *define the product desired* and *limit the amount of the drillwork*, without in any way interfering with the freedom of the teacher to meet the standards by any method he may wish to use. When superintendents and teachers once appreciate the satisfaction of this means of supervisory control, measurement of efficiency in such terms will be generally adopted.

Suggested problems.—Attempt to reach 100 per cent efficiency. Measure the children at the beginning of the year as to rate of reading in several different materials (that is, rate of reading a story in readers, a reference in history, a lesson in geography, etc.), following the general method outlined above. Work with individual pupils below standard until the standard score is reached. Excuse the able from reading-drill. Measure results at end of year and determine amount of improvement of class and of individual, and compare results with work of another teacher both as to efficiency and as to time-cost.

Use standard scores in determining the amount of material to be assigned in one lesson, checking up on the time spent by the children until the proper length for a lesson is determined in terms of the standard rate of reading. If an eighth-grade child can read at the rate of 200 words per minute and he has ten minutes for study, it would obviously be wrong to assign a reference of 2,000 words to be studied. Experiments seem to show that with one reading a child will be able to reproduce about one-half of the essential ideas. It is quite possible that a reference of 500 words would be sufficiently long. But whatever the proper length, the relation to the rate of reading should be known, and the study of children should be supervised until they are able to "learn" a standard length of lesson in a "standard" time.

Note.—Definition of aim and limitation of training are possible in all subjects and grades, and certain school men in many different localities are actively carrying on the necessary experimentation by which the evolution of new administrative methods is forwarded. For the benefit of those who have not given the matter thought heretofore, the following objective standards are suggested, as those now available for practical school work:

1. Reading:

A child in Grade.....	IV	V	VI	VII	VIII	
Should be able to read simple prose at the rate of.....	160	180	220	250	280	words per minute

and to reproduce 50 per cent of the ideas in a 400-word passage after one reading.

2. Writing:

Handwriting.—A child whose daily penmanship in spelling, English, history papers, etc., is as good as quality 12 of the Thorndike scale (or 60 on the Ayres scale) needs no further direct drill in handwriting.

Rate of writing.—A child should be able to write

An original story (after reflection)
A reproduction of a story read to him } at a rate of

Grade.....	III	IV	V	VI	VII	VIII	
Original story.....	9(?)	12	14	16	17	18	words per minute
Reproduction.....	11(?)	14	17	19	21	23	" " "

3. Composition:

The quality of his story or composition in

Grade.....	IV	V	VI	VII	VIII
Should be.....	45	49	53	58	65

on the Hillegas scale.

4. Arithmetic:

Four operations with whole numbers, using examples like the following:

TYPICAL EXAMPLES

Addition	Subtraction	Multiplication	Division
345 487 631 205 943 683 859 175 794	3479127468 1867396737	4179 36	67)61707

Children in the various grades in the time indicated should be able to work correctly the number of examples in the following table:

Grade	Test 1 Addition	Test 2 Substraction	Test 3 Multiplication	Test 4 Division
III	3	4	3	2
IV	5	6	5	4
V	7	8	7	6
VI	9	10	9	8
VII	11	11	10	10
VIII	12	12	11	11
Time allowance	8 minutes	4 minutes	6 minutes	8 minutes

Rule for finding the efficiency of teaching in any topic in which a definite objective aim has been established: Test the entire class under uniform conditions as to time and instruction, using sufficient material of a single type to keep the most able busy during the entire time. Score results on a uniform basis. Determine the number of scores that equal or exceed the standard. Find what per cent these scores are of the total number of scores.

Remarks.—Faulty control of the conditions of testing is responsible for much of the self-deception which now exists among teachers. For instance, it is foolish to judge the efficiency of the teaching of handwriting from samples obtained where the children are simply told to submit samples of their handwriting. The best specimen for judging the writing of an individual is that written as part of the first draft of an original story. Even then, although satisfactory in quality, the

writing should not be accepted as standard unless written at the standard rate for the child's grade. Only as proper speed was maintained, and only as the handwriting in the specimen was fulfilling its proper function (that of recording thought), should it be considered as suitable for measurement of the handwriting training. For many purposes it is enough, however, to control the rate of writing in a dictation exercise. For this purpose the following table enables the dictation to be given at the proper rate:

	Grade					
	III	IV	V	VI	VII	VIII
Number of seconds per letter	?	1.2	1.0	0.85	0.73	0.63
Number of seconds per word	?	4.3	3.6	3.2	2.8	2.6
Average number of letters per word	?	3.5	3.6	3.7	3.9	4.1

For instance, in dictating the following paragraph to an eighth-grade class in June, a watch having a second hand should be used. When the second hand reaches 60 the first sentence should be said, and because it contains 67 letters the teacher should wait 42 seconds ($67 \times 0.63 = 42$) before saying the next sentence, and so on. The numbers in parentheses show the position of the second hand when the sentence following should be dictated.

(60) The trees are heavy with leaves; and the gardens full of blossoms, red and white. (42) The whole atmosphere is laden with perfume and sunshine. (12) The birds sing. (21) The cock struts about and crows loftily. (43) Insects chirp in the grass, (57) yellow buttercups stud the green carpet like golden buttons, (29) and the red blossoms of the clover like rubies.

Spelling, punctuation.—The time-factor is very important in tests in spelling and punctuation. A correct result, written legibly and easily (at proper speed), is alone to be desired. The dictation exercise above is also a spelling and a punctuation test, but even in the conventional spelling-lesson the rate should be controlled. Illustration (eighth grade):

Time	Word
(60)	which
(3)	separate
(8)	rustle
(12)	receive, etc.

SECTION 3

SELECTED BIBLIOGRAPHY UPON PRACTICAL TESTS OF READING ABILITY

WILLIAM S. GRAY
Department of Education, University of Chicago

The articles are arranged inversely in the order of their publication; that is, the most recent appears first and the oldest appears last.

Schmitt, Clara. "School Subjects as Materials for Tests of Mental Ability," *Elementary School Journal* (continuation of *Elementary School Teacher*), XV, 150–61, November, 1914.

This article discusses the possibility of using reading and other school subjects to form a series of tests which can be used from year to year to measure the development of special abilities. The accomplishment of the child in reading is discussed as to quantity and quality. The methods and results of reading tests for normal and defective children are discussed in detail.

Thorndike, E. L. "The Measurement of Ability to Read," *Teachers College Record*, XV, 207–27, September, 1914.

This article presents preliminary scales and tests for the measurement of achievement in reading along the following lines:

1. A pupil's ability to understand the meaning of words and sentences seen, so far as concerns (*a*) the understanding of words singly, and (*b*) the understanding of sentences and paragraphs. ("A Scale for Visual Vocabulary" and "A Scale for Measuring the Understanding of Sentences and Paragraphs," by E. L. Thorndike.)

2. A pupil's ability to pronounce words and sentences seen in a series of paragraphs arranged in the order of increasing difficulty. ("A Tentative Scale for the Measurement of Oral Reading Achievement," by William S. Gray.)

Brown, H. A. "Measurement of Efficiency of Instruction in Reading," *Elementary School Teacher*, XIV, 477–90, June, 1914.

This article treats of the relation of the measurement of reading ability to the reconstruction of methods of teaching. The factors involved in measuring reading efficiency are outlined, and a practical method of testing reading achievement is given in some detail.

Judd, Charles H. "Reading Tests," *Elementary School Teacher*, XIV, 365–73, April, 1914.

Standards for measuring efficiency in school subjects are defined. The value of comparison between groups undertaking similar work is emphasized. Practical suggestions are given concerning the selection of material for reading tests and concerning the administration of the tests.

Courtis, S. A. "Standard Tests in English," *Elementary School Teacher*, XIV, 374–92, April, 1914.

The six tests used by Mr. Courtis to determine standard rates of reading and to determine comprehension are presented in a single series under the head of "English Tests." The relation of these tests to the measurement of reading ability is discussed.

Pinter, Rudolf. "Oral and Silent Reading of Fourth Grade Pupils," *Journal of Educational Psychology*, IV, 333–37, March, 1913.

The problem discussed is: Is the percentage of subject-matter retained or comprehended increased or diminished by the supposed help of oral reading?

Bowden, Josephine. "Learning to Read," *Elementary School Teacher*, XII, 21–33, September, 1911.

This article reports the results of an experiment to determine how children recognize words.

Hendricks, Eldo L. *A Preliminary Report of a Study in Reading*, Silver, Burdett & Co., 1911.

This pamphlet presents the methods and results of a study of the rate of silent reading and the degree of comprehension in grades I A, IV A, and VIII A.

CHAPTER V

HANDWRITING

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The aim of these reports, as determined by the committee under whose direction they have been prepared, is the determination of the minimum essentials in the subjects of the curriculum which are concerned. In the case of a subject like handwriting, the object of which is the development of skill, minimum essentials are to be considered, not as absolute requirements, but as dependent in a measure upon the time and effort which are required to attain them. It is germane to the subject, then, to consider both the amount of skill which it is desirable that a pupil shall attain from the point of view of the demands of society and of his later life, and also the time which is required in order to attain this skill. The subject, then, may be approached from either side. We may ask, on the one hand, what degree of excellence in writing the pupil should possess in order to be able to meet the demands which will be made upon him; or we may ask, on the other hand, what degree of skill is attainable under specified conditions in the school.

We shall attack the second phase of the problem first, and assume for the time being that a reasonable amount of skill is desirable and necessary for every elementary-school pupil. We shall attempt to define more particularly what a reasonable degree of skill is by the study of the skill which is actually attained by the pupils in a large number of cities in the United States. We shall then further attempt to determine whether this degree of skill will be actually required by the pupil, from a result of a questionnaire sent to various business houses regarding the degree of excellence in writing which they demand of applicants for positions.

In order to obtain a basis upon which to construct a standard of attainment for the pupils in the various grades of the elementary school an investigation was made of the proficiency in handwriting of the children in a number of the larger cities of the United States. The

results of this investigation, which are presented in summary form in Table I and in Chart I, represent the average speed and the average legibility of the writing of the children in each grade from the second

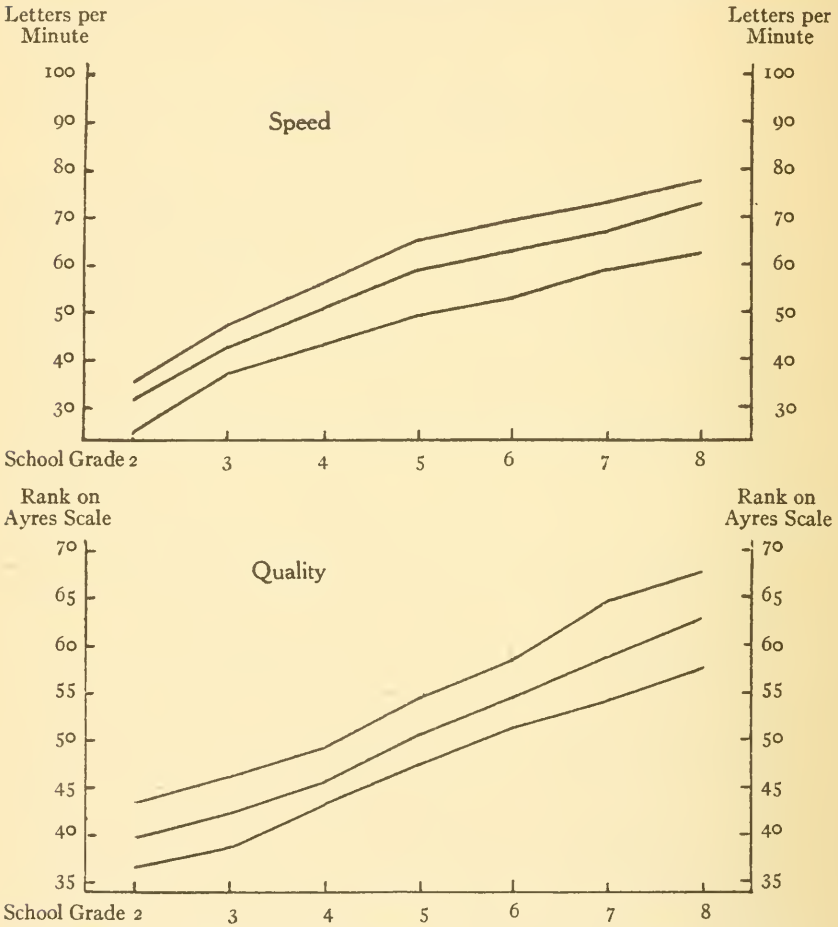

CHART I.—Average speed and quality (middle lines) and average of upper and lower halves in all the schools investigated.

to the eighth. This average of attainment for all the schools is represented by the middle line in each of the charts. In addition to this, the schools were divided into two groups, on the basis of the total efficiency

of the writing from each school. The first group represents all of those who are above the average in attainment, and the second group is the remainder. The upper line in each chart represents the average attainment of the upper half, and the lower line the average attainment of the lower half.

TABLE I

AVERAGE SPEED AND QUALITY AND AVERAGE OF UPPER AND LOWER HALVES IN ALL THE SCHOOLS INVESTIGATED

		School Grade						
		II	III	IV	V	VI	VII	VIII
Speed	Average of upper half...	35.4	47.7	56.2	64.9	69.2	73.4	77.8
	Average of all.....	30.6	43.8	51.2	59.1	62.8	67.9	73.0
	Average of lower half...	24.4	37.4	43.4	49.9	52.8	58.5	61.2
Quality	Average of upper half...	43.5	46.1	49.3	54.5	58.5	64.7	67.8
	Average of all.....	39.7	42.0	45.8	50.5	54.5	58.9	62.8
	Average of lower half...	36.8	38.8	43.2	47.4	51.5	54.2	57.6

A word should be said regarding the manner in which the data for these charts were collected. A questionnaire was sent to the superintendent of each city in the United States of 30,000 inhabitants and over, and in addition to this a request that a test be made in two representative schools of the system. Minute directions for the conduct of the test were given in duplicate form so that one copy might be had by each person conducting the test. The test was to include the measurements of the speed and also of the legibility or the quality of the writing. A measure of the speed was obtained by requiring the pupils to write for two minutes. The number of letters which were written per minute was then taken as the measure of speed. The papers were sent to the writer at the University of Chicago, who had them graded by the members of a class in experimental education.

Fifty-six cities responded to the request that a test be made, and sent the papers in to be graded. Of these papers, 24 were selected at random from each grade of each school. Thus there were 336 papers selected from each school. In round numbers, allowance being made for the fact that papers from some schools were missing, there were about 34,000 papers graded. The average for each grade, then, is represented by about 5,000 papers.

The grading for legibility was done by means of the Ayres scale, since this is presented in a somewhat more systematic form than the Thorndike scale, and since previous investigations indicated that it gave a slightly greater reliability of judgment. The experience which was gained from using the scale in the investigation and an investigation which was made by Mr. H. T. Manuel and presented in satisfaction of the requirements of the Master's degree in the Department of Education of the University of Chicago indicate that the individual measurements must be taken with a large allowance for error. The mass results, however, which are represented in the curve of the average and the curves of the upper and lower halves of the schools represented, may be taken to be reliable, since they are the combined results of the measurements of a large number of investigators. In order that the writing of the children in a particular school or school system may be compared with this standard, it would be necessary that it be examined by several investigators. The grades obtained by a single grader upon a group of papers have one chance in two of being as much as half a step on the scale above or below that which would be obtained by a large group of investigators. Half a step is equivalent to more than the average difference between successive grades.

The upper line in the chart, then, may fairly be taken to represent the legibility and the speed which are attained by the better schools in the larger cities of the country. Care was taken to avoid the possible error due to the fact that some schools might be superior in speed but inferior in legibility, or vice versa. This fact would affect the results if the schools were grouped to obtain the upper half by speed and legibility separately. In this investigation the schools were ranked separately at first, and then a combined rank was formed, and the upper half in this combined efficiency was determined upon. The upper line, then, represents those schools which occupy the upper half in combined efficiency, and the lower line those which occupy the lower half in combined efficiency.

The upper line may be taken as a basis or a starting-point for discussion in the determination of standards for attainment. This places the standard at a point which is equaled or excelled by approximately 25 per cent of the schools of the cities represented, and which is fallen below by approximately 75 per cent of the schools. A standard which is equaled or excelled by about 25 per cent of the schools of the country is

one which is obviously perfectly possible of attainment. It is a standard which is attained under the ordinary conditions of school life. We have no reason to presume that the conditions in these cases are superior to those in the case of the other cities which were studied; or, to speak more correctly, the conditions which have produced the superiority in certain cities over others are such as might be obtained in the cities which show inferior results. Among the conditions which might conceivably produce a superiority in results are: the superior native ability of children; the superior ability of teachers, or superior training; a superior method of supervision or of teaching; and a larger amount of time spent in the study of the subject.

Among these possible causes we may rule out the first, since there is no reason to suppose that the average capacity of pupils in the cities of the country varies to any considerable extent. So far as the efficiency of the teachers or of the methods which are used is concerned, this is a matter which is under the control of the school administration, and if it can be shown that superiority in the results from certain schools is due to these factors the responsibility lies upon the administration to see that it obtains the superior conditions in its own school system. The last factor, that of the amount of time spent, is answered in the results of the questionnaire which was included in the present investigation.

The distribution in time which was spent upon handwriting in the cities which replied to this question is shown in Table II. It is seen from this table that there is a wide variation in this matter. Some cities spend no time in certain grades, or spend upon an average only about 45 minutes per week, while other cities spend nearly three times as much time as this. One city, in fact, spends upon the average five times as much as do two other schools.

The average amount of time spent in the grades taken as a whole does not vary so much as the amount of time spent in each grade taken separately. This is due to the fact that some schools spend more time in the earlier grades and others in the later grades. It is frequently the case that little or no time is spent in the first two grades or in the last two. Three typical modes of unequal distribution appear according as a larger amount of time is spent in the earlier, the middle, or the later grades than in the remainder. The time distribution in a number of cities which represent these types is shown in Table III.

TABLE II

DISTRIBUTION OF TIME SPENT IN TEACHING WRITING IN 66 CITIES

(The figures in the body of the table indicate the number of cities which the amounts of time specified in the margin.)

TIME IN MINUTES	GRADE								AVERAGE OF ALL GRADES
	I	II	III	IV	V	VI	VII	VIII	
?	2	1	1	1	1	1	1	2	1
0	4	2	.....	.....	.....	.....	1	4	.....
30– 39	1	.....	.....	.....	.....	1	1	3	.....
40– 49	1	1	.....	.....	.....	.....	6	6	2
50– 59	12	10	5	4	2	2	.....	1	7
60– 69	3	3	4	5	12	15	20	18	13
70– 79	20	22	27	22	22	25	19	17	18
80– 89	2	4	4	7	5	4	6	6	13
90– 99	1	2	2	2	3	3	8	4	7
100–109	16	15	16	22	16	11	2	4	.....
110–119	.....	.....	.....	.....	.....	.....	.....	.....	2
120–129	2	4	3	1	4	2	1	.....	2
130–139	.....	.....	1	1	.....	.....	.....	.....	.....
140–149	.....	.....	.....	.....	.....	.....	.....	.....	.....
150–159	1	1	2	.....	.....	1	.....	.....	.....
160–169	.....	.....	.....	.....	.....	.....	.....	.....	.....
170–179	.....	.....	.....	.....	.....	.....	.....	.....	.....
180–189	.....	.....	.....	.....	.....	.....	.....	.....	.....
190–199	.....	.....	.....	.....	.....	.....	.....	.....	.....
200–209	.....	.....	.....	.....	.....	.....	.....	.....	.....
210–219	.....	.....	.....	.....	.....	.....	.....	.....	.....
220–229	.....	1	1	1	1	1	1	1	.....
230–239	.....	.....	.....	.....	.....	.....	.....	.....	1
240–249	.....	.....	.....	.....	.....	.....	.....	.....	.....
250–259	1	.....	.....	.....	.....	.....	.....	.....	.....
Total no. of cities	66	66	66	66	66	66	66	66	66
Median	74.8	77.0	78.2	81.6	77.9	75.3	71.9	69.2	75.3

TABLE III

THREE TYPES OF DISTRIBUTION OF TIME GIVEN TO WRITING IN THE DIFFERENT GRADES (IN MINUTES PER WEEK)

	GRADE							
	I	II	III	IV	V	VI	VII	VIII
Average of 12 cities	96	96	90	80	79	71	67	57
Average of 11 cities	53	58	80	90	88	68	55	54
Average of 6 cities	43	52	56	65	69	73	74	62*

* Drop due to the fact that one city gives no time in Grade VIII.

The question immediately arises whether the larger amount of time spent by some of the schools enables them to attain a greater efficiency. If so, it would then be necessary to raise the question whether the added efficiency is a justification for the increased amount of time. If, however, it is found that those which spent the larger amount of time do not thereby profit in the efficiency which is gained, the second question does not need to be asked.

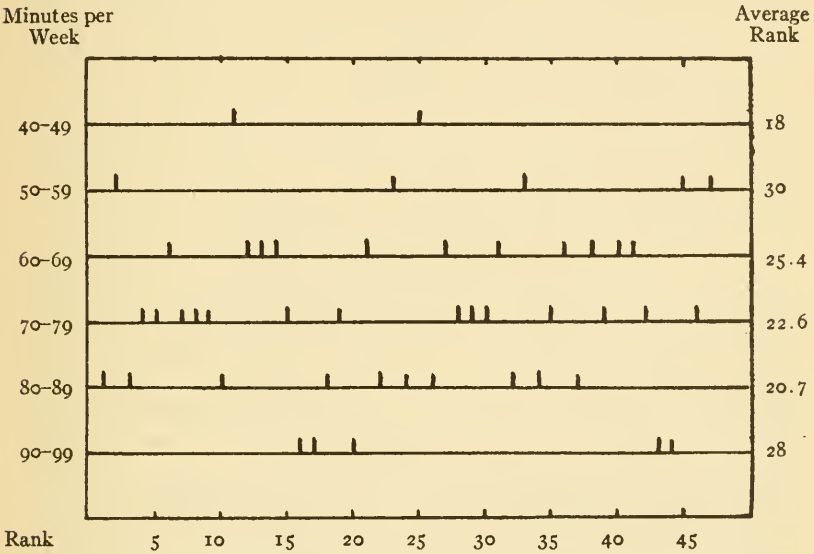

CHART II.—Distribution in rank of 47 cities arranged in classes according to the time spent on writing.

The comparison in the rank of schools which spend different amounts of time upon writing is shown in Chart II. Each vertical line in this chart represents one city. The lines upon the same horizontal line represent the cities which spend the same amount of time in writing. Those on the upper line spend the least amount of time, and those upon the lowest horizontal line, the largest. The position of the lines in the right or left direction represents the rank which was obtained by the schools as a result of the test. Those which are at the left side of the chart are higher in rank, and those which are toward the right are lower.

If the spending of a large amount of time in writing produces a corresponding gain in efficiency, the vertical lines should be grouped

along a diagonal line running from the lower left-hand corner to the upper right-hand corner. That is, those which spend the less amount of time should be toward the right, and vice versa. It is evident that this situation is not represented by the facts. The cities which spend the various amounts of time are scattered throughout the range. For example, of the two cities which spend on the average only 45 minutes per week, one has the eleventh rank and the other the twenty-sixth; while two of the cities which spend an average of 95 minutes have the rank of forty-three and forty-four, very nearly at the bottom of the list. The average rank attained by the cities of each time-group are represented in the column to the right. It will be seen that with the exception of the shortest-time and the longest-time groups there is some increase in efficiency with an increase in time, but this increase, which holds on the average, is slight, and the exceptions are so great that the amount of time spent appears to have little influence upon the results.

Another means of judging the effects of the length of time spent in handwriting upon the efficiency of the product is to compare the amount of time spent by the cities which compose the upper half with those which make up the lower half. When this is done it appears that the amount of time is practically equal. The 23 cities of the upper half spend $73\frac{4}{10}$ minutes per week, and the 23 cities of the lower half, $73\frac{3}{10}$ minutes.

In endeavoring to interpret these facts it is not necessary to assume that the amount of time spent has no effect upon the efficiency of handwriting teaching. It does appear to mean, however, that it is not desirable to spend more than ten or fifteen minutes a day when this time is spent all in one period. The data which are at hand do not give sufficient information upon which to base a conclusion as to the best amount of time to give. Such a conclusion could best be based upon experiments in which different amounts of time were tried out with the same class or with the same school, and with other conditions remaining the same. The conclusion which can be drawn from the data, however, is that the superior attainment of the schools in the upper half of the whole group is not due to spending a greater amount of time in handwriting teaching.

Taking the average attainment of the upper half of the schools, as represented by the upper curves upon Chart I, as a tentative standard or as a basis of discussion, we may look upon them from another point

of view. If we compare the curves for legibility and for speed, we see that the former advances steadily and at about an equal rate from the first grade to the eighth; while the curve for speed advances rapidly up to the fifth grade and then very slowly from the fifth grade to the eighth. The difference in speed of writing between the second grade and the fifth is $29\frac{1}{2}$ letters per minute; while the upper grades on an average gain only $12\frac{8}{10}$ letters per minute above the fifth grade. This break in the rapidity of advance in speed furnishes a point of attack and raises the question whether it is necessary and desirable.

If we ask ourselves the reason for this difference in the speed and legibility, part of the answer probably is to be gotten from the fact that legibility is more readily tested in the school and that more attention is paid to it than to speed. The permanent result of the child's writing is represented in the quality of the writing, while the rapidity with which he writes is not evident merely upon the inspection of the paper. The teacher will therefore more readily notice and will be more likely to criticize deficiency in legibility than deficiency in speed.

These considerations do not serve to explain, however, why there is a more rapid advance in speed in the earlier grades than in the later ones. This difference may perhaps be accounted for by the fact of rapid increase in motor ability up to the period of adolescence, and the slower increase in ability from that time forward. Chart III shows the curve of progress in rapidity of tapping from an examination of a thousand school children by Gilbert. The parallelism between this curve and the curve showing the speed of writing is striking. If the hypothesis which was presented in the preceding paragraph, then, is correct—namely, that the progress in legibility is more continuous than in speed because the teacher can observe it better and is supposed to criticize this point more than that of speed—it will serve to explain, not why the progress in speed becomes less rapid after the sixth grade, but why the progress in legibility continues while that of speed does not.

We may ask, then, whether the facts as they are presented are to be taken as a basis for the construction of a standard, or whether it is reasonable to expect and demand that progress in speed continue in the same way as does progress in legibility. If such continuation is to be attained, it can be had only by the application of greater stimulus toward speed than is commonly given. That the attainment of a much higher speed in the higher grades is possible without undue effort is shown from

the records of the group of seven schools shown in Table IV and Chart IV. The average amount of time spent by these schools is $73\frac{1}{2}$ minutes, which is not greater than that spent by the other schools which are the subject of this study, and the total efficiency of each is high enough to place it within the highest quarter of all the schools.

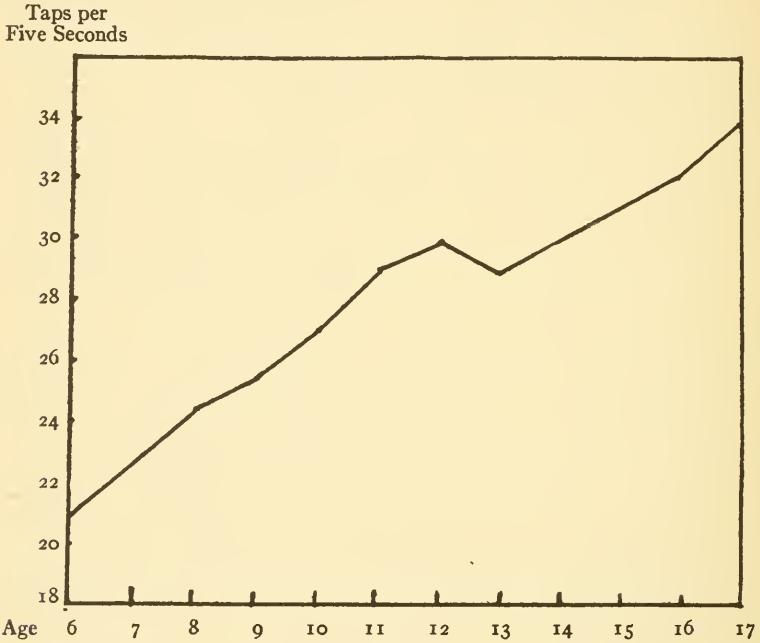

CHART III.—Progress with age in rate of tapping (after J. A. Gilbert, *Studies from the Yale Psychological Laboratory*, 1894, II, 65).

TABLE IV

SPEED OF SEVEN SELECTED SCHOOLS FROM THE HIGHEST QUARTER OF THE WHOLE GROUP IN TOTAL EFFICIENCY

	SCHOOL GRADE						
	II	III	IV	V	VI	VII	VIII
Speed.....	45.4	53.1	60.0	68.1	71.7	79.6	94.2

The attainment of these schools indicates that under favorable conditions there may be a falling off in the rate of progress in speed at the fifth grade but that the loss may be made up by the time the eighth grade is reached.. It is therefore not unreasonable to require a more rapid rate of progress from the fifth to the eighth grade, when it is considered from the point of view of the capacity of the pupil. Whether it, as well as the other features of the standards which have been described, is reasonable from the point of view of the demands which will be made upon the pupil we shall have to consider next.

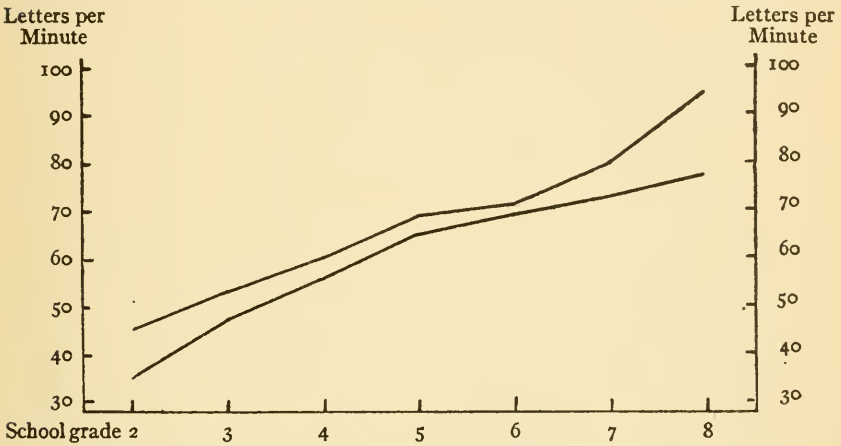

CHART IV.—Average speed of writing of seven schools which are in the upper 25 per cent of the whole group in total efficiency (upper line) and the average speed of the upper half for comparison (lower line).

Table V shows the results of the questionnaire which was sent to various employers of clerical workers asking for information regarding the degree of excellence in writing which they require of the applicants for positions. The firms which are represented are among the largest in Chicago and may be taken as typical of the kinds of business houses which they represent. The results can be taken only as suggestive, since they are limited in the number of cases which were investigated. Taken as a whole, however, they give some basis for drawing the conclusions as to the degree of excellence in writing which pupils should attain at the end of the elementary school.

TABLE V

Summary of Questionnaire

Kind of Firm	Kind of Work	Number Employed	Education Required	Importance of Writing*				Quality of Writing Regarded as Essential†			Quality of Writing Regarded as Desirable			Is Speed Important?
				1	2	3	4	Vertical	Medium Slant	Extreme Slant	Vertical	Medium Slant	Extreme Slant	
Correspondence school	Clerical	15	High school preferred	...	√	...	...	.....	90	.....	.....	90 and should be better	.....	Yes
Department store	Clerical and accounting	19	Grammar school		...	...	...	70	70	60	80	90	90	Yes
Mail-order house	Stenography and bookkeeping	500	High school desirable	...	√	...	...	60	60	60	90	90	90	Yes
Correspondence school	Entry and bookkeeping	30	Grammar school	√	...	...	...	.....	90 or better	.....	.....	90 or better	.....	Yes
Mail-order house	File clerk	400	High school preferred Grammar school	...	√	...	...	60	60	50	80	80	80	Moderately
Department store, wholesale	General	.....	Grammar school at least	...	...	√	...	60	60	70	60	70	70	Yes
Packing company, railroad department	Clerical	90	Prefer high school	...	...	√	...	60	.....	.....	.....	.....	90	Yes
Department store	General office	82	Grammar school	√	...	...	...	70	60	60	90	80	80	Yes
Mail-order house	Addressing	200	Common school	√	...	...	...	.....	80	70	.....	90	90	Yes
Correspondence school	Addressing	75	Common school	√	...	...	...	70	.....	.....	.....	90	.....	Yes

Department store claim department	Clerical	50	Grammar school	...	...	√	...	30	40	40	80	90	70	No
Packing-house.....	"Distribution"	38	.....	...	...	√	...	.....	.....	70	.....	.....	.....	Yes
Packing-house.....	"Account sales"	53	High school	...	√	...	...	.....	.....	60	.....	.....	.....	Yes
Mail-order house...	Stock clerk	100	Common school	...	...	√	...	60	60	60	80	80	80	Moderately
Total.....	.....	1,702												

* No. 1 represents the highest degree and No. 4 the lowest degree of importance. † In terms of the Ayres scale.

As may be seen from the column which is headed "Education Required," all pupils who have finished the elementary school may enter the positions which are included in this table, although in a number of cases it is stated that high-school education is preferred. The positions which are represented in the table were chosen because it was thought that they would be typical of positions in which handwriting is an important qualification. That this is the case may be seen from the results in the column headed "Importance of Writing." The results of this study, then, will apply to those positions or vocations in which handwriting is an important qualification. We may expect that in the majority of other positions handwriting would not be so important. An inspection of the figures in the table will show that the quality which is most frequently regarded as essential for candidates is that of 60 on the Ayres scale. However, the qualities of 80 and 90 are most commonly those which are designated as being important enough to enhance materially the chances of a candidate. It is a reasonable position to take that the standard set for the preparation of the child should be such that it exceeds the minimum essentials, and at least comes, in some degree, toward the maximum quality which would be of value to the pupil. The standard of 70 for the eighth grade is not high from the point of view of the demands of these kinds of work. The results expressed in the last column indicate that practically all of the employers of labor in cases in which handwriting is an important element regard speed as of importance. It was not thought practicable to attempt to obtain more definite statements regarding the degree of speed which is attainable, owing to the fact that the men to whom the questions were addressed would not in all probability be able to express their standards in more definite terms.

A further fact which should be considered in the determination of this question is the number of children who will find it necessary or advantageous to possess the degree of skill which is to be adopted as a standard. To throw some light on this matter we may consider both the future educational and the future vocational careers of elementary-school pupils. Professor Strayer, in his article on retardation, in the *Cyclopedia of Education*, estimates that 35 per cent of the school population reach the high school. A fluent and legible style of writing will be very advantageous to these pupils in their school work. In fact, they will find it desirable to write more rapidly than 90 letters a minute and

the quality of their writing may be expected to deteriorate rather than to improve, unless they receive additional drill.

TABLE VI

VOCATIONAL DISTRIBUTION OF THE FATHERS OF ELEMENTARY-SCHOOL CHILDREN

Unskilled laborers	4 per cent
Semi-skilled laborers and machine operatives	22 "
Artisans and industrial foremen	40 "
Clerks and salesmen	9 "
Managers, superintendents, and proprietors	21 "
Professional and financial	4 "

Light is thrown on the question as to the number of elementary-school graduates who will require a fluent and legible style of writing in their vocations by a table which Dr. Ayres gives[1] showing the vocational distribution of the fathers of elementary-school children (see Table VI). It seems clear that the members of the last three groups, which comprise 34 per cent of all, will find it to advantage to possess the degree of skill attained by the upper half of the schools. A considerable number of the artisans and industrial foremen also make large use of writing. If we add half of these to the last three groups, we get 54 per cent.

There is of course a large duplication between the two groups, those who go to high school and those who have use for an efficient writing habit in their vocations. But some of the latter do not go to high school, and it is probably safe to increase the percentage of those who are affected to something over 60 per cent of the population. This 60 per cent of the population who will need to possess an efficient writing habit includes practically all who complete the eighth grade, since the percentage of the pupils who complete the grades is the same—60 per cent, and since nearly all those in the occupational groups which have been included will have completed the elementary school. Therefore practically all of those who would be required to reach the proposed standard will have need for it in their later life.

The foregoing facts and discussion have been brought together into a standard which is expressed in Table VII and in Chart V. The upper

[1] L. P. Ayres, "Some Factors Affecting Industrial Education," *Elementary School Teacher*, XIV (1913), 313–18.

line in the chart shows the standard for quality, which is to be read by referring to the figures in the left margin; and the lower line represents the standard for speed, which is to be read by reference to figures in the right margin. The standards are based directly upon the results of the average of the upper half of the schools. The only important modification is that in speed from the sixth to the eighth grades. The justification for this modification has already been suggested. In brief,

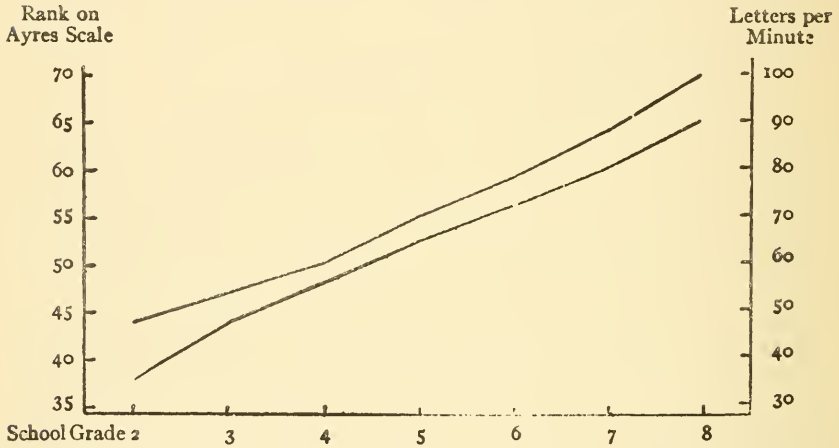

CHART V.—Proposed standard for quality (upper line) and speed (lower line).

TABLE VII

PROPOSED STANDARD FOR QUALITY AND SPEED

	SCHOOL GRADE						
	II	III	IV	V	VI	VII	VIII
Quality	44	47	50	55	59	64	70
Speed	36	48	56	65	72	80	90

it is this: While the diminution in the rate of increase from the fifth grade on is a natural one, and is to be explained by the lower rate of increase in motor ability at this time, yet the efficiency which has been attained in a number of schools shows that the drop is not necessary. Furthermore, the actual speed which is attained even in the upper half

of the schools by the time of the eighth grade is lower than it should be. Less than 80 letters a minute is slow writing, and the standard which is laid down, of 90 letters per minute, is well within the bounds of reason. The only other modifications which are made consist in slight changes of the averages found in order to make the numbers round numbers, and to smooth very slight irregularities in the curves. The greatest change consisted in slightly raising the standard in quality for the eighth grade, so as to bring it up to 70 instead of $67\frac{5}{10}$. This maintains an even progress; whereas the results from the averages show a drop at the eighth grade.

The data which have been presented indicate that this standard can be attained with an expenditure of time of not over 75 minutes a week. The writer is convinced on the basis also of some of the data that it could be attained generally, as it is in some cases, by the expenditure of a much shorter amount of time. When the most efficient methods are employed it will probably be found that the expenditure of from ten to fifteen minutes in the intermediate grades suffices to fix the handwriting habit in its main outline; and that the expenditure of a small amount of time in the upper grades will maintain the efficiency of the habit and increase it by the amount of progress which is represented in the standard. The consideration of these matters, however, is not a part of our task. A fuller discussion of them may be deferred to some other occasion.

CHAPTER VI

SPELLING

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MINIMUM CONTENT

Many attempts, unintelligent, or at least haphazard and unscientific, have been made to abridge the spelling course. Teachers have tried to select words from the different subjects in the curriculum or from the spelling texts. While such effort is commendable, it has failed to secure good results because of the fallibility of individual opinion regarding the most important material.

Even among teachers of the same grade there is wide difference of opinion as to what the essential minimum should be. An attempt on the part of the writer to make a graded vocabulary for the elementary school secured words of much too great a range of difficulty for each grade. Only consistent and extensive investigations under skilled supervision will secure adequate results.

The work of several investigators in this field is very commendable and should be more widely known to school men.

Only a few spelling books can be mentioned. *Hicks's Champion Spelling Book*, which has been used so successfully in the Cleveland, Ohio, public schools, is based on the excellent spelling instruction and the experience of teachers in that system. It presents a minimum of ten words per day, two of which are "dominants," and is arranged in such a way that each word is reviewed five times in two years after it is learned, an important factor in the learning process.

The *Bailey-Manley Spelling Book* contains a comparatively small vocabulary chosen with great care; it is an outgrowth of actual teaching experience. It recommends the use of words which every child should know, supplemented by a list based on class or individual needs. Nine words a week are assigned for the second grade, with a gradual increase as the pupils advance.

Dr. Rice's speller has some good features. It attempts to grade words according to difficulty and to give the most common ones precedence; uncommon, i.e., technical terms, are to be taught incidentally. He has attempted to abridge the text by omitting words which "spell themselves," "derivative words formed according to rule," and words whose spelling the pupils learn by the time their introduction is necessary. The number of words per lesson is high; fifteen to twenty for the first three years, and fifteen to twenty-four for the fourth through the eighth.

Professor Jones, of the University of South Dakota, has summarized the results of several years' work in his *Concrete Examination of the Material of English Spelling*[7]* and *The Child's Own Spelling Book*.[8] The content of these two works was established by an examination of over fifteen million words in the themes of 1,050 school children. The list of 4,532 words used in the speller is not a minimum one because it includes for each grade all words which were used by at least 2 per cent of the pupils of the grade. The following table shows the distribution of words and also the average vocabularies by grades:

	Grade						
	II	III	IV	V	VI	VII	VIII
Distribution	1,927	2,396	2,838	3,270	3,695	4,114	4,532
Average vocabulary	521	908	1,235	1,489	1,710	1,926	2,135

Professor Jones says that the most troublesome words are found in the second- and third-grade lists and "faithfully reappear throughout the subsequent years. Over nine-tenths of all words misspelled by the 1,050 grade-students are found in these two lists." The writer has checked up the "one hundred spelling demons" of the Jones list, and finds that ninety-two of them are included in the second-grade list, four in the third, and four in the fourth. This shows where a good deal of the emphasis in spelling teaching should be placed.

The list omits many common names; it includes words having a purely sectional significance; those which are just coming into use, such as "aeroplane"; and those which are disappearing, as "surrey" and "phaeton." This suggests the need of a constant, careful revision of

* Numbers refer to bibliography.

spelling material with a view to giving the child only such words to learn as he will actually use.

Professor Jones's study shows that the child's writing vocabulary is very small as compared with the whole vocabulary. Dr. Ayres's study of *The Spelling Vocabularies of Personal and Business Letters*[1] supports this idea; in fact his investigation found that only 542 different words were used in the greater part of the correspondence from twelve different sources differing as widely as love letters and business letters.

The learning of the words of the writing vocabulary should be required as the pupil advances through the grades. What we need is to develop a spelling consciousness that will make the pupil more awake to orthographical errors, and a conscience that will not permit him to leave a word until he is sure that it is correct. Probably such a condition would result, not only in better spelling, but also in better composition.

Mr. Homer J. Smith[4] has three lists of 1,138 spontaneously used words chosen from 75,000 words in the themes of Madison, Wisconsin, elementary-school pupils, Grades III—VIII. The first list includes words used by pupils in all of the grades; the second of words used by at least three; and the third of words used in two different grades. It can be seen that the basis of selection is universality of use. While the list looks good, it would be more usuable if carefully graded. It omits personal, demonstrative, and possessive pronouns; numerals; about thirty common prepositions, conjunctions, verbs, and adverbs; and local proper names. These omissions constitute a weakness except for the local names, which need not be included except in a purely provincial list.

Chancellor's list[3] of 1,020 words, compiled from his correspondence, is, to quote the author, composed largely of "words that constitute the machinery of our language." It contains no proper names or "words for spelling matches."

Mr. R. C. Eldridge,[6] a factory manager of Niagara Falls, New York, has compiled a list of 6,002 words, together with their frequencies, from two pages of each of four Buffalo, New York, daily papers. The list was prepared to serve as the basis for a "universal vocabulary"; it is of great value as a spelling list, although somewhat specialized. According to Mr. Eldridge the first 250 words are found to constitute the chief English sentence-forming words. "The first 750 words in List 5 [the

compiled list], with their repetitions, constitute more than three-fourths of all the words on the eight pages from which they have been drawn, and probably a large part of these words would be found in nearly the same proportion in any English conversation or printed matter."

Appended to Mr. Eldridge's work is a list prepared by Rev. J. Knowles, of London, England, of "the 353 most frequently occurring words in an aggregate of 100,000 words, made from passages of the English Bible and various authors, arranged in the order of their commonness and showing how many times each of the 353 appears."

Another graded list for Grades III–VII, inclusive, is a compilation published in the Chico, California, State Normal School *Bulletin No. 7*, "Common Essentials in Spelling,"[14] prepared by Messrs. C. K. Studley and Allison Ware. This work includes the 542 words of Dr. Ayres's study;[1] it makes use of an 840-word list—each word was used more than twice in 19,288 words of correspondence examined—prepared by Miss Effie McFadden and Dr. Frederick Burk, of the San Francisco, California, State Normal School. Finally, the authors examined 200,000 words in children's themes in which "3,459 different words or different forms of the same words" were used. "Words not clearly of common written use in life were omitted in the final compilation." The total number is 3,470—over one thousand fewer than are found in *The Child's Own Speller*.

Mr. Algar Woolfolk in an unpublished thesis[19] gives a list of 411 words which "are suitable for incorporation in a text or course of study." The words—only those misspelled four or more times are given—were taken from a miscellaneous set of compositions "consisting of one-third letters" written by pupils in Grades III–VIII, inclusive, of the Horace Mann School, and the public schools of Newark, New Jersey, and Richmond, Virginia. It is valuable because (1) it contains common words and (2) shows the relative frequency of misspellings by grades.

None of the lists is claimed to be a "minimum list"; any one of them is very suggestive as a starting-point. Dr. Ayres's 542 words constitute about seven-eighths of all the words used in the correspondence investigated; the first 750 words of Mr. Eldridge's list constitute, in the author's opinion, about three-fourths of all the words commonly used; Professor Jones's second-grade list "contains the very useful words of all the grades";[7] in the list prepared by Dr. Burk and Miss McFadden only 840 of a total of 6,916 words were found to be used

more than twice, and these "included and verified most of the words of the Ayres list."[13]

On the basis of investigation up to the present time, the writer feels justified in placing the minimum content in the elementary spelling course at from 750 to 1,000 words. Considerable checking of lists against each other, further study of the frequency of words used in children's written work, and a careful trying out of the resulting list in its tentative form will be necessary before any very definite conclusion can be drawn.

Some of the words common to all of the lists offer no real difficulty and might be omitted from a "minimum" list; doubtless further investigation would show some additions to be necessary. Just what changes should be made can be determined only by testing the ability of pupils in successive grades to spell the words and use them in sentences. The words left after such a revision would constitute a fairly reliable minimum.

The writer has examined over 250 city-school reports and courses of study to find to what extent they consider the matter of content. The great majority of them treat the subject in a purely perfunctory way, stating the amount that is to be done each month or year in lessons or pages of a certain text. About sixty of the courses give somewhat more definite information, but few offer anything of real value.

Four courses definitely recommend as high as ten to fifteen words per day; five say that from two to five should be learned; two require from six to twelve. Three courses give instructions to use the adopted text with certain specified omissions.

Of the few cities giving definite numbers of words as the requirement for the whole course, Berkeley, California (1914–15), recommends a minimum of 4,700 for Grades II–VI; New York City[15] recommends 3,800 for Grades II–VIII; Richmond, Virginia (1914), 3,250 for Grades II A–VII B; Bath, Maine (1914), 9,300 for Grades I–VIII.

A publication, *Teaching of Spelling*, issued by the New Jersey Department of Public Instruction, recommends four or five words for a primary lesson, five to seven for an intermediate grade, and not more than ten for a grammar grade. Triweekly lessons for six years on this plan, it is maintained, would give the working vocabulary of a well-educated adult and leave ample time for review. This would give approximately 4,000 words.

Lists of words for Grades I and II are given in the courses of Dover, New Hampshire (1912); Passaic, New Jersey (1912); Augusta, Georgia (1913); Albert Lea, Minnesota (1914); Omaha, Nebraska (1911); Milwaukee, Wisconsin (1913); and Toledo, Ohio (1908–11). Dallas, Texas (1912–14), and Des Moines, Iowa (1909), give lists for the second grade. Orange, New Jersey (1908), and Owensboro, Kentucky (1912–13), give lists for the first grade. Cincinnati, Ohio (1912), has lists for the first, second, and fifth grades. The Johnstown, Pennsylvania, *Report and Manual* (1914) mentions a spelling book compiled by teachers and supervisors which provides two words daily for Grades I–IV, and five daily for Grades V–VIII.

Doubtless there are other lists, but they are not available for the purposes of this paper. Certain definite standards for the selection of spelling words are necessary. They should be symbolical of the experiences of the children in and out of school; they should be words which the average adult uses; they should be the short, simple, frequently used, and perplexing words, such as "their" and "there," "whose" and "who's." Various texts should contribute to the list. Words misspelled by a number of the pupils in a class should be included. Individual pupils should keep lists of words which cause them difficulty. These are substantially the standards set forth in *Standards in Spelling*,[15] a study by Associate Superintendent Gustave Straubenmuller, of New York City. A number of schools are making use of these or similar standards in the selection of their spelling material.

The function of spelling is to teach children how to spell and use in an accurate way the words which are commonly met with in life and to form such habits of study that new words will be learned as the need for them arises. In the preparation of a spelling list the function which it is to subserve should be kept clearly in mind. Dr. Ayres found that of the 414 words used in the famous National Education Association spelling tests of 1908, only 125 were included in the letters analyzed for his study, while not one of the remaining 289 appeared even once. This at least suggests the futility of preparing a useful list of spelling words without careful and extensive study of the needs of the common people.

MINIMUM TIME

Very little of value concerning this topic can be gleaned from pedagogical literature. Our consideration of the topic will necessarily involve a discussion of method, with which it is so intimately associated.

The first investigator of note was Dr. J. M. Rice,[13] who concluded that more than fifteen minutes per day devoted to spelling was absolutely wasted. Dr. Rice's experiments were too crudely empirical to receive serious attention from scientific investigators, but he did much to call attention to the spelling problem. We can have little disagreement with his general conclusion regarding time. The law of diminishing returns would operate here; on account of fatigue, the amount of time spent above a certain limit would be out of all proportion to the results obtained.

Dr. Cornman's experiments[5] in Philadelphia to determine the relative merits of the "incidental" and "drill" methods of teaching spelling led him to conclude that time devoted to drill "bears no discoverable relation to the result."

Mr. Wallin's study[18] of conditions in the Cleveland, Ohio, schools, while not concerning itself directly with the problem of time, showed "on time" pupils to be superior to "accelerated" or "retarded" pupils. He calls attention to three steps in the learning process whose use cannot fail to save time: (1) a clear image of the word, visual, auditory, or motor, should be formed; (2) enough repetition in the child's own memory type should be had to fix the word in mind; (3) the procedure in one and two should be so effective that the word can be reproduced automatically, when the proper stimulus arises, with the minimum thought as to sequence of letters. He says: "Habits perhaps can never be made as stable as reflexes. Nevertheless it can be confidently affirmed that those habits which have been thoroughly ingrained will resist decay longer than those which have been only partially solidified or which have been loosely organized by slipshod methods. A completely formed habit is relatively if not absolutely stable." Stable habits mean economy of time.

Let us consider briefly what city-school reports and courses of study have to offer on our problem. Only forty out of several hundred examined give time apportionments for the several elementary-school subjects. Determination of the time devoted to spelling is complicated by several factors not easily controlled: (1) In the primary grades there is seldom anything to indicate whether the study of phonics occupies a part of the spelling period, or whether spelling is taught with reading. (2) There is little to show whether the time is devoted entirely to recitation, or to recitation and study. (3) Very few courses indicate whether spelling is

to be studied during special periods, or out of school. (4) The fact that courses of study are not issued yearly prevents any very definite conclusions regarding the relative amounts of time devoted to spelling in the past and present.

In the "early days" the time devoted to spelling in Pictou, Nova Scotia, ranged from 74 per cent of the total time for the primary grades to 25 per cent for the grammar grades.[21] This condition was probably fairly typical for the schools of that period. Multiplication of courses has necessitated a readjustment. In 1877–78, 8.47 per cent of the school time in Cleveland, Ohio, was devoted to spelling.[20] During the year 1907–8, the elementary schools of Boston, New York, Chicago, Rochester, Cincinnati, Indianapolis, St. Louis, Milwaukee, Kansas City, and San Francisco devoted an average of 7.22 per cent[20] of their time to spelling. Cleveland's time for the same year was 5.94 per cent.[20] Cleveland's record has become proverbial; the intensive study of only two new words per day makes possible a high degree of efficiency with a minimum outlay of time.

The average time devoted to spelling in eleven other, smaller, cities at practically the same time (1907–9) constituted 5.05 per cent of the total time for all subjects; the percentage for the period 1910–12 for thirteen school systems, including Cincinnati, Cleveland, and San Francisco, mentioned above, was 6.96; for a group of nineteen cities (1913–15), including one of the "eleven" group and three of the "thirteen" group, the percentage was 5.58. Figures showing the percentage of time devoted to spelling over any considerable period are not available for a large number of cities. The few that can be found simply confirm what the above figures show, that the spelling time is gradually being reduced.

EXPERIMENTAL INVESTIGATIONS OF METHODS

A series of experiments[11] was performed by Mr. H. C. Pearson in the Horace Mann School to determine the relative efficiency of class and independent methods of study in improving the child's attention, ability to select the points which need emphasis in study, and drill technique. The former method was proved much better from the standpoint of time and efficiency.

Another experiment[10] of Mr. Pearson's, repeated in one of the Montclair, New Jersey, schools, to determine the relative efficiency of

"together" and "separate" methods of teaching homonyms, proved the former to be more effective on the whole.[1]

The idea of grouping words, i.e., names of rivers, trees, cities, and the like, to facilitate learning, has been adopted by many spellers. While such a scheme may be an aid to learning the names of the associated things, it cannot be of great value as an aid to learning spelling.

Many words in the English language can be classified roughly in *groups of similar spelling*. The remainder, which are exceptions to general rules, are amenable to special study. Wagner's study[17] of the benefits to be derived from grouping words according to similarities in spelling showed a decided advantage for the grouping method. Two divisions of the sixth grade studied a list of words after their customary fashion. The only difference in the procedure of the teacher lay in the grouping of such words as "lineal," "lineament," "linear," "lineage," for one division. These pupils raised their average grade from 68.36 per cent in the preliminary test to 97.14 per cent in the final, a gain of 28.78 per cent. The other division raised its average from 73.25 per cent to 93.6 per cent, an increase of 20.35 per cent.

In 1912 the writer performed an experiment[12] to determine the value of "spelling the word through" as an aid to learning. Two divisions of the fifth grade studied the same list. Conditions as to time, length of period, and the like were the same for both divisions. For one, emphasis was placed on observing carefully the order of letters while studying. Preliminary and final tests given to both divisions showed an advance from 50.55 per cent to 83.39 per cent, or an average gain of 32.84 per cent for the division working under the usual conditions. The other division advanced from 48.58 per cent to 89.14 per cent, an average gain of 40.56 per cent.

A study of all the available experimental material in spelling shows that a consistent use of some definite method secures better results than the so often haphazard methods of many teachers. It simply confirms the opinion of the writer that a study of the question of time which does not consider method is inadequate.

SCALES FOR MEASURING SPELLING ABILITY

Some sort of a measure for spelling ability would result in economy of time by making possible a more accurate diagnosis of the situation and more intelligent methods of treatment. Dr. Buckingham has fur-

nished a scale.[2] At first it made use of two lists, each containing twenty-five carefully selected words "which showed reasonably regular increase in correctness of spelling for successive grades." By means of this scale a comparison can be made of individuals, grades, schools, and systems. By the use of groups of equally difficult words, progress over a period of time can be measured. Dr. Buckingham has extended his list to about 500 words and plans to have 1,000 carefully evaluated and classified words for Grades II–VIII, inclusive. Such an extension will make the scale infinitely more useful.

The Division of Education of the Russell Sage Foundation "has conducted studies to discover the 1,000 words most commonly used in writing and it has made these words into spelling lists with which children in nearly 100 American cities have been tested."[10a] These words will doubtless prove valuable in the preparation of a "minimum" list. Dr. Ayres has used them as a standard by means of which he has made a practical test of the spelling ability of Springfield, Illinois, elementary-school children. In this city 3,612 pupils in all grades averaged 70 per cent correct in spelling words which were spelled correctly by 70 per cent of the pupils in the same grades of the cities mentioned before.

CONCLUSIONS

Any conclusions must necessarily be merely tentative, because of the inadequate material at hand and the lack of thorough testing of results. It can be confidently asserted that spelling texts furnish neither a minimum nor, for the most part, a satisfactory list of words. The two texts based on a study of children's themes and on children's themes plus business letters seem most adequate.

Lists of words prepared by Ayres, Chancellor, Eldridge, Knowles, Jones, Smith, Woolfolk, and Studley and Ware afford material from a variety of sources. The words which they agree on might be taken, temporarily, as the minimum content in spelling. A more thorough study of children's writing vocabularies is needed to show (1) what words presenting "no difficulty" may be omitted, and (2) what important words should be added. Each word must be carefully graded; it should be placed in any grade list only when a study of the conditions underlying its use seem to justify its position.

The fact that there are only thirteen city lists, in no case for all grades and none "minimum," shows the need of a work such as is indicated here.

As to time, we know very little. The tendency in the past has been to devote too much time to spelling, because of poor organization of material and inefficient methods of instruction. The problem of time is inseparable from that of method. The figures available show that the time devoted to spelling in city-school systems has been gradually reduced until now 82 minutes per week, or 5.5 per cent of the total, is devoted to spelling.

One investigator has prepared, and another is preparing, graded lists which will be very suggestive as to content, and which may be used as standards for the measurement of spelling efficiency, and for finding how the time devoted to spelling has functioned in securing adequate results.

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CHAPTER VII

THE ESSENTIALS OF COMPOSITION AND GRAMMAR

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INTRODUCTION

Purpose of the paper.—In the present state of knowledge no one is justified in stating with any attempt at completeness what should constitute the essential as contrasted with the optional subject-matter for the study of English composition and English grammar in the elementary school. The topic is as difficult as it is important.

The present paper is a survey of progress. It reviews the discussions, investigations, and reports in this field and offers a summary of conclusions that seem fairly well established. Much remains to be done. Those who wish to press the investigation further will find in the experience of others suggestions as to problems and methods. Meanwhile, course-makers and writers of books should consider the possibility of omitting much traditional material and of placing greater emphasis upon certain activities that are highly necessary in preparation for life and that are at the same time fitted to assist the growth of children.

A general view of the problem.—One reason why economy in English proves difficult is because language forms so intimate a part of life. Improvement in it involves the whole round of home and school interests. Composition is, in a sense, a phase of all study and of all human relationships, rather than a subject to be set apart on the school program for a certain hour in the day. Mastery of it is, therefore, in large measure dependent upon the entire organization and management of the school. Nor can we stop with the school. In the matter of speech—and indirectly writing is deeply affected—the influence of the home is paramount. Other considerations aside, the home has six years the start of the school, the six most impressionable years. Hence the teacher of language, instead of introducing children to a new interest, is called upon to take stock of the language habits already acquired, strengthen and improve

these as she can, and strive to keep the child's power of expression abreast of his ideas. In the end the language he speaks will be mainly the language he has heard.

It is not likely that the time devoted to language in the elementary school can safely be cut down. We must make vast improvement, at any rate, before this will be justified. At present classes are too large to permit of proper individual instruction, methods of teaching and of co-operation are largely ineffective because unvaried and untested, and the work of each year is so ill defined that emphasis is scattered and fails to strike home. What we must aim at is (1) to discover standards which will enable us to decide what to include and what to omit from the language course; (2) to organize and present the chosen material so as to give it continuity, proportion, and a sense of realness; (3) to set up definite goals of achievement, which will stimulate to endeavor but not unduly narrow the path; and (4) to work out measurements which will enable both teacher and principal to know the true state of the pupils' minds.

Present practices are justified mainly by tradition. "It has been so." The very conception of course of study is in need of overhauling. The term means generally an outline of certain formal knowledge to be acquired rather than a series of related experiences leading to the control of consciously prized values. The English course began with a grammar for foreigners modeled on the Latin, was given a new direction by Lindley Murray, but still consists largely of "exercises" made with scissors and paste. How hazy we are on the subject is attested by the fact that language-books, with few exceptions, are a hodgepodge of composition lessons, spelling, forms to avoid, pronunciation, voice-training, picture-study, poetry, scraps of classic prose, lessons in other school subjects, and much formal grammar. It would be a positive gain if the really strong teacher could have for a while the help of a multigraph and be left to work out her own salvation without the interference of the irrelevant book.

THE EDUCATIONAL BASIS

Economy in language-training is an educational problem. It must be studied in the light of general educational principles. Before passing to the survey of actual investigations, let us pause long enough to call to mind some of the more significant attempts to analyze the nature and

purpose of school work with reference to possible omissions from the course and better organization of effort.

One of the most suggestive statements of the problem of economy is that made by Frank M. McMurry, of Teachers College, Columbia University. at the meeting of the National Education Association in 1904.[1] He proposes to eliminate:

1. Whatever cannot be shown to have a plain relation to some real need of life, whether it be aesthetic, ethical, or utilitarian in the narrower sense.

2. Whatever is not reasonably within the child's comprehension.

3. Whatever is unlikely to appeal to his interest; unless it is positively demanded for the first very weighty reason.

4. Whatever topics and details are so isolated or irrelevant that they fail to be a part of any series or chain of ideas, and therefore fail to be necessary for the appreciation of any large point; this standard, however, not to apply to the three R's and spelling.

He would secure economy by judicious selection of topics and details. Teachers must learn (1) to bring subject-matter under large but definite headings, (2) to select typical subtopics, and (3) to discover in each subject leading questions that need to be answered. What is required is better organization of each subject.

Another highly suggestive discussion of the problem of selection and organization of subject-matter is that contributed by A. Duncan Yocum, of the University of Pennsylvania, to the program of the Department of Superintendence at Philadelphia in 1913. Mr. Yocum seeks a test of the relative worth of details in the course of study that shall be both universal and practicable. "To be universal it must measure usefulness, not only from the standpoint of direct preparation for life or social efficiency, including specialization and culture, but also from that of general knowledge and mental development." Here Mr. Yocum seems to favor two of the standards which Mr. McMurry rejects. He would guard these, however, by reducing the test to a "naked definiteness" that would make selection certain through an analysis of the educational aim and the educative process.

This he proceeds to do by dividing all school discipline into phases of formal self-activity, the values of which are to be measured in terms of relationships, and concludes that—

[1] Frank M. McMurry, "What Omissions Are Advisable in the Present Course of Study, and What Should Be the Basis for the Same," *Proceedings of the National Education Association*, 1904.

those details are relatively most useful in their furtherance either of a specific phase of the educational aim or of the formal phases of mental development: (1) which are most many-sided in their relationships; (2) which are most frequent in their recurrence; (3) which inherently make the strongest sensational or emotional appeal that is useful. Relative many-sidedness, recurrence, and emotional appeal should determine the educational content. But to relative usefulness must be added immediacy of many-sidedness, recurrence, and emotional appeal, in order to determine the point at which the most useful details shall first be taught.

Such a test, Mr. Yocum holds, furnishes a definite and mathematical means of expressing value. The number and recurrence of relationships can be counted and the degree of emotional appeal estimated. This, however, will rarely be necessary. It will usually be sufficient to determine what details must be included in the general course of study and which of these must be permanently mastered. Once such details have been determined they must, in the interests of democracy, be thoroughly taught to all pupils.

It is well to take up a survey of specific investigations and formulations of standards and tests with these larger views of our problem fresh in mind. Otherwise our enthusiasm for definiteness and the promise of order where there is now much confusion may mar our perspective. A ready-made course of study on a quantitative basis which teachers could follow without thought would be no less a curse because it had a new name. Behind the machinery of economy must stand far-reaching and rational ideals.

A SURVEY OF INVESTIGATIONS

I. TESTS AND SCALES IN COMPOSITION

1. *The "Tatters" report.*—One of the earliest attempts to measure the effectiveness of school work in English was made in Chicago in 1905 under the direction of Mr. E. G. Cooley, then superintendent of city schools.[1] Somewhat persistent criticism of the results of the grade work in grammar, composition, and spelling led Mr. Cooley to undertake a test of the pupils in the seventh grade. He appointed a committee of principals and teachers, with the writer as chairman, to devise a test and examine the results. The outcome was distinctly favorable so far as the current criticisms were concerned, but not flattering in

[1] Described in the *Chicago Board of Education Bulletin* of March 28, 1906.

respect to other matters which seemed to the committee of greater importance.

The procedure was as follows: A brief story entitled "Tatters" was taken from the *Youth's Companion*, duplicated, and sent to each school in the city. The directions were:

(1) The story is to be used as an exercise in reading and reproduction. Time, one hour. No knowledge of the story is to come to the pupils previous to the time of the exercise.

(2) The story is to be read to the class by the teacher—seven minutes. The story is then to be read silently by the pupils—five minutes. After the story leaflets have been collected, the pupils will silently recall the story—three minutes. The pupils will then write the story—forty-five minutes. Collect the papers promptly.

(3) The teachers will mark the papers and afterward the principal will review the marking. In case he should differ as to any marks, he shall consult the teacher and reach an agreement.

There followed an outline of the main incidents of the story and suggestions as to what would constitute excellence to the degrees of 85, 95, and 100 per cent.

The examining committee prepared an outline to guide each member in reading and reporting upon a portion of the papers. The main points in this were (1) external form, (2) thought and composition, (3) vocabulary and sentence structure, (4) individuality, and (5) general suggestions. The complete report of the committee was arranged under these heads and was accompanied by typical compositions representing different degrees of excellence—a rough scale. There was no attempt at exactness, but the qualities of composition to be sought were definitely indicated. It remained for Professors Thorndike and Hillegas to lead the way in the making of composition scales by means of a mathematical treatment of the rankings of certain papers by several competent judges.

2. *The Hillegas-Thorndike scale.*—"The Hillegas Scale for the Measurement of Quality in Composition by Young People" is now widely known,[1] and hence no description of it is necessary. It should be remarked concerning it, however, that such a scale is intended to provide

[1] Milo B. Hillegas, "A Scale for the Measurement of Quality in English Composition by Young People," *Teachers College Record*, XIII, No. 4, September, 1912.

a fixed objective standard. It does not indicate what may be expected at any particular point in the school course. Supposing the scale to be a means of just estimate of excellence in composition, we should still be in doubt as to whether a boy in fifth grade ought to be expected to write a composition as good as some particular example of the Hillegas scale, and if so whether on first attempt or after careful revision. More serious still is the fact that this scale does not take into account the type of writing in each case as determined by the purpose in view. Description, for example, appears in comparison with narrative. Moreover, there is no attempt to distinguish between mere correctness—observance of established usage in grammar and so forth—and style, or the reflection of personality in shaping language so as to produce a given effect.

The practical value of the Hillegas scale is very doubtful. Principal Franklin W. Johnson, of the University High School in Chicago, made a test of it in 1912.[1] He submitted eight themes of high-school pupils, two of which were written by pupils with very inadequate elementary-school preparation, to forty-seven teachers of English composition in high schools, colleges, and normal schools, and also to a class of graduate students who were studying educational tests, with the request that each grade the papers with the help of the Hillegas scale. The maximum variation ranged from 18 to 69 and there was clearly no agreement as to the value of any composition. Mr. Johnson points out in his account of the experiment that the Hillegas scale represents a set of average judgments, while there is no such thing really as an average judgment. He also calls attention to the fact that the Hillegas scale takes no account of content. The examples included in it are singularly lacking in thought and originality. Two scales must be arranged, he thinks, one of which will assist in determining the value of form and the other of content.

Mr. Johnson's conclusions seem to be completely upheld by a far more exhaustive series of trials of the scale which are reported by Frederick J. Kelley in *Teachers College, Columbia University, Contributions to Education*, No. 66. He reduced the Hillegas scale and the ordinary

[1] Franklin W. Johnson, "The Hillegas-Thorndike Scale for the Measurement of Quality in English Composition by Young People," *School Review*, XXI, No. 1, January, 1913.

percentage system to common terms and found that in the hands of novices the latter shows less variation than the former. He says, however, that it remains to be shown whether considerable practice would lead to greater satisfaction in using the scale.

Soon after its publication a trial of the Hillegas scale was made by a number of teachers in Boston and neighboring towns under the direction of William S. Learned, Joseph Lee Fellow for Research at Harvard University.

A set of fifty papers, written by elementary, grammar, and high-school pupils, was graded subjectively by five elementary-school teachers, five grammar-school teachers, and five high-school teachers. The markers were simply asked to rate the relative value of each paper as a bit of prose composition and to designate this subjective rating by a percentage mark ranging according to judgment anywhere from 0 to 100 per cent. Three weeks later these same fifteen judges, with the Hillegas scale before them, regraded the papers, trying to match each with an example in the scale.[1]

The results of the experiment may be summarized as follows: The average extreme variation on the first marking was 58 per cent; on the second, 44 per cent. The variation of the nine judgments nearest the median was in the first instance from 10 per cent to 43 per cent, and in the second instance from 7 per cent to 32 per cent. The markings were, therefore, more uniform on the second round. It is contended, however, that this was due in large measure to the fact that the teachers came to the second marking with the feeling that extreme variation is undesirable and with greater unanimity of judgment because of the conference which resulted from the first marking. It was found, moreover, almost impossible to compare compositions by elementary-school children with the artificial and bookish samples in the scale. As one teacher said, the tendency was to throw the composition at the middle of the scale in despair of doing anything better.

3. *The Harvard-Newton scale.*—Stimulated by their experience with the Hillegas scale, the teachers and principals of Newton, Massachusetts, at the suggestion of Mr. Frank E. Spaulding, at that time their superintendent, undertook the formation of a scale which should be as free as possible from the defects of those of Hillegas and Thorndike. Working

[1] Charles Swain Thomas, *Leaflet of the New England Association of Teachers of English*, No. 104, January, 1913.

under the direction of Frank W. Ballou, who succeeded Mr. Learned as special research student in the department of education at Harvard University, they gathered typical compositions in description, exposition, argument, and narrative, and through consensus obtained by a scheme which included both grading and ranking in order of relative merit they selected six compositions of each type, representing degrees of excellence ranging from very poor, or about 45 per cent, to very good, or about 95 per cent.[1] These, it will be noted, were the work of eighth-grade children in various schools. When the scale was completed it was tried in practice by principals and teachers in Arlington and Boston.

A particularly useful feature of this scale is the appending to each composition of remarks by the committee upon its merits and demerits, and also of a comparison with the one just above or just below it. This makes the basis of judgment clear and enables the user of the scale to compare other compositions with it so as to give due weight to certain qualities or defects without ignoring others.

What the teachers and principals of Newton have done other teachers and principals should undertake. Not the least valuable feature of such an enterprise is the necessary conference for comparison of standards. In Newton the teachers of English in the high school participated in the work, thus coming directly in contact with the teachers in the grades. The result could not be other than enlightening to all. Even if the mathematical exactness with which the Harvard-Newton scale was worked out seems impossible because of lack of expert assistance, nevertheless, any school may provide itself with a collection of compositions representing the work of every year, or even semester. Each composition should be accompanied by a succinct account of how it was created, as well as by comments upon both its merits and its defects; and there should be sufficient variety of such compositions, ranging in quality from poor to excellent, to represent all sorts of writing likely to be done in each year. These might, in many cases, be supplemented by means of stereographic, or even phonographic, records of oral compositions, and in this way accidental, haphazard, almost wholly personal standards for children's work in composition might be replaced by

[1] Frank W. Ballou, "Scales for the Measurement of Composition," *Harvard-Newton Bulletin*, No. 2, September, 1914.

impersonal, objective, rational standards, which would stimulate to well-balanced and definitely aimed composition-teaching.[1]

Scales would render more valuable such experiments as that in the use of oral work in composition which is about to be described, because it would warrant more confidence in the opinions of those observing the results of the experiment.

4. *The Illinois experiment.*—The Illinois Association of Teachers of English, at the annual meeting in Urbana in November, 1912, selected oral composition as the subject for investigation during the ensuing year.[2] It was proposed to test the truth of the following propositions:

1. Oral composition is in itself an important part of the English work of the high school.

2. Oral composition requires relatively less time from the teacher than does written composition.

3. Proficiency in oral composition carries over into written composition.

A committee under the leadership of Professor John M. Clapp, of Lake Forest College, arranged a course for the second semester of the ninth grade, which was to be taught in two ways: one class would have

[1] Such a collection of compositions is in process at the Chicago Normal College. The form used is the following:

EXAMPLES OF WRITTEN COMPOSITION

Grade..... *School*..... *Date*.....
HISTORY OF THE PAPERS:
1. How the subject was found.....
.....
2. How the subject was worked up.....
.....
3. Conditions under which the writing was done.....
.....
4. Criticism, revision, rewriting, incidental instruction, assistance of any kind.....
.....
5. Additional information.....
.....

NOTE.—Papers of all sorts are desired. Please be very definite as to all the conditions leading up to and surrounding the writing, especially as to assistance given by the teacher. Let each pupil sign his name and state his age.

[2] John M. Clapp, "An Experimental Course in Freshman Composition for Illinois High Schools," *Bulletin of the Illinois Association of Teachers of English*, V, No. 4, January, 1913; "Report on the Experiment in English Composition," *ibid.*, VI, No. 5, February 15, 1914.

only written exercises; the other, a combination of two-thirds oral and one-third written. All classes taking either course were to be given the same written tests at the beginning, at the middle, and at the end of the semester. All the papers written by each class, including these tests, were to be forwarded to the committee in charge of the experiment, accompanied by a report from the teacher, stating as accurately as possible how much time he spent in preparation, in conference, and in correcting papers, and also his opinion as to the results of the experiment.

The outcome was decidedly favorable to the use of oral composition. "The sections taking the combined course were better at the end of the semester in thought—vigor, freedom, interest—than the others; they were better in point of grammatical and rhetorical structure; they were *no worse* in spelling and punctuation and better in handwriting—indeed, the writing sections showed marked degeneration in all matters of mechanics." Over half of the twenty-two schools which carried out the experiment in full reported greater improvement in the combination sections, while only two reported less improvement.

The association adopted the following recommendations of the committee: (1) That oral exercises be made a regular part of high-school English work throughout the course, in the proportion of two-thirds of oral work to one-third of written work in the first year, one-half of each in the second year, and one-third of oral work to two-thirds of written work in the third and fourth years; (2) that school authorities allow time in the daily session for conference on oral exercises to the amount of five minutes per week for each pupil; (3) that each school be encouraged to work out its own course in composition to suit local conditions, stressing in the first year the group method of collaboration and the preparation of themes on how to do something or make something.

This experiment has been described at some length because, dealing with high-school English though it does, it represents the sort of procedure by which the value of certain types of material for instruction may be determined. Moreover, the kind of treatment which was found to be best for the ninth grade would beyond reasonable doubt prove equally satisfactory for the seventh and eighth.

II. TESTS AND RECOMMENDATIONS IN GRAMMAR

The most pressing problem in the grammar grades, however, is to decide what sort and how much of grammar to teach. Opinion on this

subject, as everybody knows, has been oscillating between radical and conservative views for many years. The conservatives hold (1) that the study of English grammar in the elementary school is of great value as an aid to clear and correct composition and intelligent reading; (2) that it is a training in thinking or at least that it "disciplines the mind"; (3) that it is necessary for those who will continue the study of English in high school and take up there the study of foreign language; and (4) that the facts and principles of English grammar belong to the body of knowledge which should be common to all in a civilized community.

The radical opposes some or all of these contentions. He declares (1) that the study of grammar is of little or no value either to composition or to reading, for both are made possible only by habit based upon imitation and not by learning the rules which govern the relating of words in sentences; (2) that the alleged training in thinking does not "carry over" and that mental discipline in general is a myth; (3) that such grammar as is actually needed in high school should be taught there; and (4) that only the pedant sees value in general familiarity with grammatical terms and facts.

There are of course many shades of both radicalism and conservatism and some mixed views, but the summary just made will serve to define the question.

1. *Hoyt's report on grammar.*—The first attempt to determine by scientific methods the place of grammar in the elementary curriculum was made by Franklin S. Hoyt in 1906. The plan followed was, "first, to trace historically the teaching of English grammar . . . . ; secondly, to ascertain upon what grounds the teaching of grammar is justified by current pedagogical literature and by teachers; thirdly, to test the validity of each of these arguments; and, finally, if possible, to draw some conclusions that will aid in the formulation of courses of study in English."[1]

Historically, Mr. Hoyt observes, the study of English grammar came in near the close of the Elizabethan period. "The language had attained its greatest vigor and beauty before the 'science of speaking and writing correctly' had been formulated." The first grammar was for the use of foreigners and was modeled upon the Latin grammars in vogue.

[1] Franklin S. Hoyt, "Studies in the Teaching of English Grammar," *Teachers College Record*, VII, No. 5, November, 1906.

Thus it was loaded down with rules and distinctions not applicable to English, which have been reluctantly dropped because of the scholastic theory that the study of them is good mental discipline.

Persons expressing opinions as to the place of grammar in school Mr. Hoyt classifies as follows: (1) those who believe in teaching no formal grammar in the elementary school; (2) those who would have grammar taught as a distinct regular subject; (3) those who would have it taught only incidentally in connection with the language-work. The second group, those favoring formal grammar, advance the arguments summarized above, particularly that of mental discipline. This argument Mr. Hoyt thinks unimportant so far as elementary children are concerned, since the more abstract conceptions of grammar are for the most part beyond them, and in any event the researches of Thorndike and others have thrown grave doubt upon the whole contention that discipline is to any great extent carried over.

As for the need of laying a foundation for studying other languages, Mr. Hoyt quotes with approval the views expressed by earlier writers, who hold that other languages are well fitted for grammatical study and may well take care of themselves. The few terms in general use can be learned without the necessity of an extended course in English grammar.

The remaining arguments, namely, that both expression and interpretation are aided by grammar study, Mr. Hoyt subjected to investigation. He gave tests in composition, in grammar, and in interpretation to pupils in three cities who had entered high school about four months before. Space will permit only a summary of his results. He found practically no correlation between the ability to answer questions of grammar and the ability to write or to read (a condition which was afterward found to characterize the work of hundreds of high-school graduates who wrote examinations in English for entrance to the Chicago Normal College; indeed, it often appeared in the case of these students that time spent upon formal grammar had been at the expense of training in composition).

The conclusions drawn by Mr. Hoyt from this study were as follows:

(1) A critical examination of the arguments usually advanced in favor of the study of grammar leads to their rejection, in the main, when applied to the present teaching of formal grammar as a separate subject in elementary schools.

(2) It is therefore recommended that grammar should not be taught as a separate subject in the elementary grades, at least below the eighth year.

And that only such grammatical facts and principles be taught in these grades as have a direct bearing upon the use of language for expressing and interpreting thought. Such grammatical instruction should be incidental to the practical study of language, and should evolve from it. During the last year of the elementary course pupils should systematically review and organize the knowledge of grammar thus incidentally obtained, so that it may be permanently retained in convenient form for use and as a foundation for any future linguistic study.

To these was appended, by way of suggestion, an outline of such grammatical forms and classifications as might be taught in the elementary school. This included:

(1) Classification of sentences:
   a) As to form: simple, compound, complex.
   b) As to use: declarative, interrogative, imperative, exclamatory.
(2) Phrases and clauses.
(3) The parts of speech, with only such classifications of them as are actually of use; e.g., proper noun for the use of capitals.
(4) Inflections:
   a) Singular and plural forms of nouns, pronouns, and verbs.
   b) Declension of pronouns. (Case and person developed in connection with personal pronouns.)
   c) Possessive forms of nouns.
   d) Comparison of adjectives and adverbs.
   e) Principal forms of verbs, with little regard to conjugation, mode, voice, tense, etc.
(5) The more useful rules of syntax; e.g., "A pronoun used to complete the sense of an intransitive verb is in the nominative case."

The basis of the selection of this material is obviously its relation to the probable needs of the pupils. It includes all of grammar that is referred to when it is stated that "Grammar is useful as a tool of thought." It excludes all that has been retained solely because of its supposed disciplinary value, or for the purpose of information. The small amount of material remaining, constituting as it does an essential part of the training of English, will be taught in connection with the language-work and, under fairly skilful teaching, so persistently applied as to become an effective tool in the work in composition and interpretation. It will thus no longer remain an illogically distinct subject to be hastily swallowed as a dimly apprehended and distasteful abstraction, but it will be assimilated as a vital part of the child's language experience, thus insuring both a better understanding of the really fundamental grammatical principles and greater skill and enjoyment in the use of the language

as a means of expression. This will be brought about through the better mastery of these grammatical principles and because of the substitution of the more fruitful English work for the discarded instruction in grammar.

2. *Briggs's report on grammar.*—Whether grammar porvides an important means of mental discipline, Mr. Hoyt did not investigate. This task was undertaken some years later by Thomas H. Briggs at Columbia University.[1] He made a survey of the claims which have been advanced for formal grammar as a discipline but found no experimental evidence to support them. He accordingly arranged several sets of tests, some of which had previously been used by Bonser, Whipple, and others, to determine the mental ability of children. Two classes in the seventh (the highest) grade of the Horace Mann Elementary School were given intensive work in formal grammar for three months and tested from time to time as to their ability to see likenesses and differences, form definitions, judge reasons, use data, reason in arithmetic, make prompt and accurate associations, follow directions, etc. The results obtained were compared with those which appeared in schools in five other cities and in the practice departments of two normal schools.

There was no gain in any ability which could be attributed to the work in grammar and surprisingly little, in view of the effort put forth, in the knowledge of grammar itself. Mr. Briggs concludes that, while future experiments may lead to different conclusions, the burden of proof, at any rate, is now upon those who believe that general mental discipline is obtained from the study of formal grammar.

3. *Charters' report.*—More recently a study has been made by Professor W. W. Charters, of the University of Missouri, which seems likely to be of considerable value in making out courses for schools.[2] This was an investigation to determine what errors connected with grammatical rules were made by the children of Kansas City, and to determine upon this basis what rules should be taught to children in the elementary grades. Definite directions were sent to the teachers of Grades III–VII[3] as to the sort of written work to collect and also as to noting and recording errors in speech. Only papers which the pupils

[1] Thomas H. Briggs, "Normal English Grammar as a Discipline," *Teachers College Record*, XIV, No. 4, September, 1913.

[2] Not yet published but will appear as a bulletin of the University of Missouri.

[3] The seventh is the highest grade in the elementary schools of Kansas City.

wrote freely without help or corrections were to be handed in. The pupils were to be left unconscious of the test and were not to use any special kind of paper or make any special effort. The purpose was to get during a period of four weeks as much writing as possible, with no repression or caution from the teacher. Errors in speaking were carefully noted and written down by all teachers and principals during the entire school time of a single week.

The oral errors were then classified by graduate students under Mr. Charters' direction, with the advice and assistance of certain of the university instructors in English. The written papers from the sixth and seventh grades in twelve schools were afterward examined and the errors collected. When the various errors were thus assembled and percentage tables made out, it was possible to arrange an outline of the rules actually broken and an additional outline of the rules necessary in order to understand those which had been broken. For example, the rule that a verb must agree with its subject in person and number is unintelligible to one who does not know the meaning of subject, person, number, verb, etc. This procedure made clear what must be included in the course to meet certain definite needs.

The language texts in use in the Kansas City schools were next examined and a statement prepared to show what might be omitted from them. The topics included in this "Index Expurgatorius Grammaticae" are exclamatory sentence, interjection, the appositive, the nominative of exclamation, the nominative of address, the objective complement, the objective used as a substantive, the adverbial objective, the indefinite pronoun, the classification of adverbs, the noun clause, conjunctive adverbs, the retained objective, the infinitive except the split infinitive, mood (except possibly the subjunctive of "to be"), the objective subject, the participle (except the definition and present and past forms), the nominative absolute, and the gerund. Two topics needed to be supplied, the pronoun "what" and proper and numeral adjectives.

Positively the study seems to show that there are a number of grammatical principles which should be well taught. Among these are: (1) proper as contrasted with common nouns; (2) the possessive of nouns; (3) the formation of the plural; (4) the inflections of pronouns; (5) the uses of the relative pronouns; (6) the cardinal and ordinal numerals; (7) comparison of adjectives; (8) verbs as to kind, number,

tense, and voice; (9) adverbs as distinguished from adjectives; (10) idiomatic uses of prepositions and conjunctions; (11) placing of modifiers; (12) double negatives; (13) syntactical redundance, and of course (14) the sentence as a unit. The number of failures to begin a sentence with a capital and end with a period or other proper mark was very large.

4. *Other studies and reports.*—Other somewhat similar studies of children's language are now in progress. For example, the department of education in Harvard University is directing an investigation of the natural history of the sentence in the expressions of children, with the purpose of learning at what stages instruction in certain phases of grammar and composition will supply actual needs. We are clearly about to enter upon a period in which both courses and textbooks in language for the elementary school will be constructed in the light of relatively exact information in place of rough and ready opinion based upon personal impression and unthinking tradition.[1]

III. STANDARDS OF ATTAINMENT

One method of preventing waste of time and effort in school work is to set up definite standards of attainment. Like many other good things, such standards may easily prove harmful. They may, for example, narrow the field of endeavor to the point of hampering the teacher and rendering her work machine-like. Absence of such standards, on the other hand, usually means low pressure, a good deal of useless wandering, and great unevenness of results. The educational rhapsodist is content with purple patches and unfulfilled dreams, but the practical administrator expects tangible and consistent progress. If reasonable latitude is allowed as to the means, there can be no serious objection to fairly definite prescription as to ends.

In English, as in other subjects, the textbook is still the real gauge. Many courses of study undertake to state in general, and even in particular, what is to be accomplished during the elementary period as a whole and during each year or semester of it, but only the strong teacher can carry out such a program without the aid of a book in which the material for each period is arranged and the work which the pupils are to do indicated. Books should, however, be made to conform to the course of study. At present the course of study is generally made

[1] Allan Abbott, "Scientific Standards in English Teaching," *English Journal*, IV, No. 1, January, 1915.

to conform to the books. We must develop a technique of criticism for textbooks. A school board is now almost as much at a loss to tell what books to buy as it is when called upon to select an administrative officer. What action it will take in either case is largely a question of salesmanship.

Interest in the movement for a reform of our educational system by beginning secondary work with the seventh grade has stimulated endeavor to formulate the attainments which should be expected at the end of the sixth grade. In the report of the Committee on the "Six-Year Course of Study," which was presented to the Department of Secondary Education of the National Education Association at the Cleveland meeting in 1908, we find the following specifications with regard to English:

A. *Reading.*—Pupils should be able to get the thought and express the thought in simple narrative prose and poetry, such as *Robinson Crusoe* and "Paul Revere's Ride."

B. *Spelling.*—They should be able to spell correctly 90 per cent of the words commonly used in their home and school vocabulary.

C. *Writing.*—They should be able to write legibly and with fair rapidity.

D. *Composition.*—(1) They should be able to compose and write a business or social letter in conventional form on a simple assigned topic that properly comes within the experience of children of their age. (2) They should be able to compose and write short descriptions and narratives on simple themes appealing to the natural interests of children and falling within their experience.

A somewhat similar attempt to set up definite standards in English for the new elementary schools has been made by the Joint Committee of Thirty on a National English Syllabus, which constitutes one of the subcommittees of the Commission on the Reorganization of Secondary Education, and which is acting under the direction also of the National Council of Teachers of English. In its second preliminary report at St. Paul in July of 1914 a subcommittee of this committee offered the following:

ATTAINMENT IN ENGLISH AT THE END OF THE SIXTH SCHOOL YEAR

The Committee on English has assumed from the beginning that in the near future secondary education in the United States will begin with the seventh school year. Hence, in seeking to provide for proper articulation

between elementary and secondary work in English, the committee has found it desirable to inquire as to what sort of foundation in English can be laid in the first six grades. It cannot be too strongly emphasized, however, that the committee does not assume the right or the wisdom to set up standards of admission to the high school. The painful history of college-entrance requirements and the equally painful history of the overloading of the elementary course of study by the well-meaning college specialists on the Committee of Ten and its subsidiary committees provide a sufficient warning. Such statements of attainment as the present committee will venture to make will be drawn from the actual experience of elementary principals and teachers and will be found modest enough. Indeed, what is most needed is not a theoretical raising of standards but a sorting out of essentials and more generally efficient methods of securing a mastery of them.

It is important to bear in mind that there are two distinct aspects of the process of education. The first is purposeful activity, resulting in habit, and the second is interpretation of experience, resulting in knowledge. Both should have a place in the elementary school, but unquestionably the first should receive chief emphasis there. Children learn by *doing* rather than by the more formal rationalizing processes. Indeed, the chief distinction between the education of children under twelve and those above that age is to be found in the fact that with the seventh grade may be said to begin the really systematic ordering of the facts of experience into scientific knowledge.

It follows that a statement of attainment for the elementary period should be mainly in terms of habits, of ability to do, rather than in terms of facts and principles which the children should be expected to state. Granting that the unity of consciousness prevents any actual separation of doing and knowing, one may nevertheless hold that there is great advantage in measuring achievement in terms of the former. After all, the only sufficient test of ability is the meeting and mastering of real conditions, and teachers need constantly to be on their guard lest they mistake a certain facility in professing the forms of knowledge for actual initiative and control.

With these principles in mind we may now attempt to state in outline what normal children may be expected to do when they have reached the close of the sixth grade:

1. To express clearly and consecutively, either in speech or in writing, ideas which are entirely familiar to them.

2. To avoid, both in speech and in writing, gross incorrectness of grammar.

3. To compose and mail a letter, using a form acceptable for general purposes.

4. To spell the vocabulary which they commonly write and to make sure of new or doubtful words.

5. To read silently and after one reading to reproduce the substance of a simple story, news item, or lesson.

6. To read aloud readily and intelligibly news items from the school paper, lessons from the textbooks being used, or literature of such difficulty as "Paul Revere's Ride" or Dickens' *Christmas Carol*.

7. To quote accurately and understandingly several short poems, such as Bennet's "The Flag Goes By" and Emerson's "The Mountain and the Squirrel."

8. To make intelligent use of ordinary reference books.

Everyone will understand that such an outline is in no sense to be regarded as a course of study in English nor as a complete summary of all that children should and do gain from the study of reading and composition. The more fundamental and far-reaching results, which can be expressed only in terms of character, are here only implied. They come, moreover, if they come at all, from the entire life of the school, not from a single study. Nevertheless, teachers of experience will see at a glance that it will require a well-organized and efficiently administered course to establish, not merely in the exceptional child, but in all normal children, the habits set forth in the seven items mentioned above. For the true best of such habits is that they assert themselves regularly, not merely under the special conditions of a school examination.

Both these statements have been quoted with regard to attainment in all phases of English work in order to show the composition element in its relations. Distinct advance has been made by the second report in the clear emphasis placed upon speech, including correctness of grammar, and in omitting reference to certain types of discourse, particularly literary types. This report also recognizes the problem of articulation between the elementary and the secondary schools.

That subject has been studied with great care by another committee of the National Council of Teachers of English, whose findings concerning composition and grammar are highly suggestive as to the topic under discussion, namely, definite standards of attainment based upon essentials as a means to economy of time.[1] Their recommendations are based upon answers to a questionnaire, upon an examination of a large number of courses of study, reports, and textbooks, and upon personal observation, experience, and conference. The committee had in mind the usual eight-year elementary course, and hence its report covers the grammar grades.

[1] Ernest C. Noyes, "The Articulation of the Elementary and High-School Courses of Study," *English Journal*, III, No. 5, May, 1914.

The committee finds much more called for on paper than by any possibility can be accomplished—maximum courses without principles of selection. High-school topics are being attempted in the grades, especially in the case of formal grammar and rhetoric, while simpler and more essential matters are not thoroughly taught. Written composition is emphasized at the expense of oral. The work to be done is not clearly indicated and confusion must be inevitable.

The committee makes definite constructive suggestions as to what the work in composition and grammar should include and these deserve a careful reading.[1] They have been borne in mind by the present writer in preparing the summary with which this paper ends. To this and the other sources named above may be added numerous state and city courses of study and such articles and opinions as those of Mrs. Fish and Miss Fontaine, reference to which will be found in the bibliography appended.

SUMMARY AND CONCLUSION

At the end of about a decade of study, investigation, and discussion of the problem of economy in language and grammar it appears that progress has been made:

1. In singling out those activities which are most valuable and in setting up definite standards of attainment.

2. In eliminating much abstract and formal material, especially in English grammar. If the grammatical aspects of composition have been consistently dealt with in the grades below, forty recitations in the grammar grades should suffice to organize all the science of grammar likely to be useful to a child of fourteen. This implies that the regular terms for grammatical concepts are used whenever there is occasion to refer to grammatical forms and relations in connection with either speech or writing.

3. In developing standards of measurement by which the results of work in composition may be more accurately determined. Only a slight beginning can be recorded here, however; so complex a product as a written paper cannot be measured as to its various qualities by a single scale like that of Hillegas.

4. In laying a foundation of educational principles in accordance with which the details of economy may be worked out.

[1] *Ibid.*, pp. 311–12.

In seeking to define the essentials of language and grammar we must first discover what the aims of common-school education are. Preparation for life, for example, must be carefully analyzed into those specific aspects which such preparation includes.

The language course must be thought of mainly in terms of habit. Power to speak and to write, not to define technical terms or state rules of correctness, is the end to be attained. The content of oral and written expression as a subject of study in the elementary school is not mainly the principles of composition and grammar but rather the child's own expanding ideas about his environment and his own part in it. Only so much of theory should be taught as can be realized by the child himself, and this should be directly related to his experience.

We must seek to choose that subject-matter for each grade which can be made to seem real, can have a genuine appeal, to the pupils. The mere distribution through a series of years of facts, principles, and practice exercises to develop knowledge and skill which it is supposed will be needed later must be replaced by experiences and formulations which are of real use here and now.

Definite standards of attainment must be set up instead of vague notions of freedom and originality in language or its wooden and mechanical prototype, mere correctness.

This will involve more accurate measures of excellence than we have been accustomed to use. Personal idiosyncrasy and subjective impression must be corrected and supplemented by objective standards by means of which educational experience in one set of circumstances may be compared with like experience in other circumstances, and by which the value of certain kinds of subject-matter and types of reaction may be more accurately determined.

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CHAPTER VIII

CURRENT PRACTICES AND STANDARDS IN ARITHMETIC

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Certain phases of arithmetic have been subjected to challenge for many years. Educational theorists, educational investigators and men in actual charge of educational affairs have been critical toward the content, method of teaching, time expenditure, gradation and achievement in the subject.

The theorists have been especially forcible in their condemnation of the teaching of many of the more or less obsolete topics, the artificialities of method and the amount of time given over to the subject. Hall condemned the amount of time devoted to arithmetic, saying, "Nowhere in the whole curriculum can so much time be saved."

Within recent years there have been a number of special investigations in regard to the arithmetic situation. In 1902 J. M. Rice tested the arithmetical knowledge of more than 6,000 children. In 1908 C. W. Stone tested 6A grades in 26 cities. These men found wide variations in achievement, time cost, methods of teaching and supervision.

In 1913 Superintendent L. H. Van Houten made an investigation of the time distribution, the grade distribution of topics and certain other supervisory phases of arithmetic in 150 American cities. Last year the writer and Dr. L. D. Coffman, working for the Committee on Economy of Time, made an investigation of the time expenditure, grades in which textbooks are introduced, emphasis on drill, eliminations and new topics in almost a thousand school systems.

The men in the field—superintendents and teachers—have also given serious consideration to the demands of arithmetic. In 1887 President Francis A. Walker conducted a campaign in the Boston schools which resulted in an order by the School Committee that the following subjects be dropped from the course of study: mensuration of the unusual surfaces and solids, compound proportion, compound interest, equation of payments, exchange, metric system, compound partnership, etc. In the

report of the Baltimore School Commission in 1911 considerable attention was given to arithmetic as to time expenditure and topical emphasis. Superintendent G. M. Wilson, of Connersville, Indiana, in the same year found, after a detailed investigation of a number of courses of study in use elsewhere, that many cities had already made eliminations.

The American Committee No. 1 of the International Commission on the Teaching of Mathematics reported in 1911 on mathematics in the elementary schools. This committee and its subcommittees contained the names of more than forty men and women more or less intimately connected with the problem of mathematics instruction. As a result of their investigation of the subject, they said, "There is a great pressure to simplify the course. This is being done by using smaller numbers in the work in arithmetic; by eliminating topics that are unduly confusing; by giving carefully graded, simple problems; and by cutting down the extent and increasing the emphasis on the part that remains. There is also great pressure to modernize the course. This is being done by eliminating obsolete problem material, topics and processes, and by substituting therefor modern problem material. There is pressure to make the subject possess informational value as well as disciplinary value."

Mr. S. A. Courtis, director of research of the Detroit public schools, has made the most thoroughgoing study which has yet been made of achievements in addition, subtraction, multiplication and division which are being attained in arithmetic throughout the different grades in a large number of cities. Indeed the investigation of Mr. Courtis has been carried so far that he has already set up certain tentative standards of expectancy for the fundamentals in the upper grades.

With a view to finding out the extent to which superintendents were interested in these problems, their attitude toward certain proposals for elimination and current practice in the schools, the writer and Dr. Coffman last year made an investigation which included returns from 867 cities with a population of 4,000 and over and from 114 county superintendents throughout the country. This report was presented before the Department of Superintendence of the National Education Association at the Richmond meeting. It was found that there was great interest in the topic and that a large percentage of the superintendents were alert to the possibilities of effecting economy of time by means of omitting certain material, redirecting emphasis on certain other

material and modifying the time cost. In fact school superintendents in large numbers are already at work making modifications with a view toward testing the theories or profiting by the facts thus far discovered. Thus in a certain sense this present report might be considered as a clearing-house of experience, which will enable any superintendent to know what other superintendents are doing.

In the judgment of the Committee on Economy of Time the time is now favorable for the widespread dissemination of information in regard to policies already adopted in a large number of cities. Educational theorists have projected certain ideals in the light of the whole field of education. The special investigators have presented a body of facts showing the standards or norms in practice, covering a wide enough range of conditions to warrant certain consideration. The superintendents themselves are experimenting in many different directions. Although theorists, investigators and superintendents are not perfectly agreed, there is sufficient agreement to make it worth while to know its extent on the following points: (1) the elimination of topics; (2) increased emphasis on topics; (3) the recitation time distribution; (4) the percentage of drill; (5) grade of textbook introduction; (6) grade emphasis on topics; (7) the standards of achievement.

THE ELIMINATION OF TOPICS

In view of the fact that such a large percentage of the superintendents of the country have already either eliminated these topics or are in favor of giving them less attention, it is recommended that an economy of time may be effected by the elimination of the following topics from the elementary course of study: apothecaries' weight, alligation, aliquot parts, annual interest, cube root, cases in percentage, compound and complex fractions of more than two digits, compound proportion, dram, foreign money, folding paper, the long method of greatest common divisor, longitude and time, least common multiple, metric system, progression, quarter in avordupois table, reduction of more than two steps, troy weight, true discount, unreal fractions.

Chart I, which is based on the expression of the superintendents in 830 cities last year, shows the percentage of superintendents who favor the elimination of or less attention to these topics. (Taken from the investigation of Jessup and Coffman.)

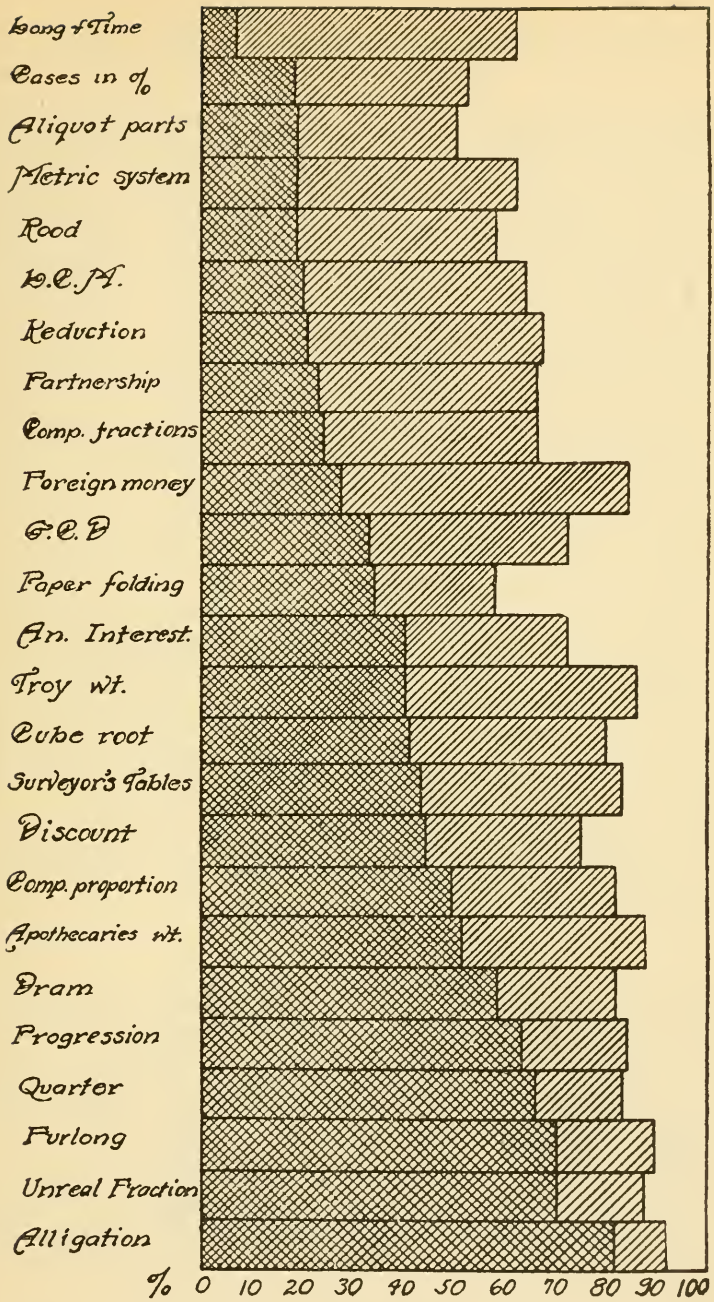

CHART I.—Percentage of superintendents who favor "elimination" or "less attention" (830 cities represented). Checked surface represents the percentage who favor elimination. Shaded surface represents the percentage who favor less attention.

INCREASED EMPHASIS

There has, no doubt, been a disposition on the part of some educational theorists and some superintendents to minimize the importance to be given to training in the fundamentals in arithmetic, viz., addition, subtraction, multiplication, division of whole numbers and fractions. Certain pedagogical theories have tended to minimize the importance of this phase of the work. These theories, coupled with the fact that arithmetic has received a great amount of time, have resulted in a disposition in certain quarters to neglect the teaching of these fundamentals.

However, it is certainly an important fact that the majority of superintendents throughout the country are in favor of emphasizing these fundamentals. It is recommended that this phase of arithmetic be especially emphasized in the intermediate grades to the end that children attain a high standard of ability in these processes by the time they have completed the sixth grade.

It is further recommended that the applications of arithmetic to the social and economic conditions of the day be given especial attention. Time saved through the omission of the material mentioned in the foregoing may be wisely devoted to the study of the social, economic and arithmetical issues involved in such facts as saving and loaning money, taxation, public expenditure, banking, borrowing, building and loan associations, investments, bonds and stocks, tax levies, insurance, profits, public utilities and the like.

Chart II shows the percentage of superintendents who favor giving more attention to each of these topics. (Based on the investigation made by Jessup and Coffman.)

RECITATION TIME

The investigation reported last year brought out the fact that a wide variation existed in the amount of recitation time given over to arithmetic in the various grades. The results of the investigations by Rice, Stone and Courtis have been such as to indicate that it is easily possible to expend more recitation time on arithmetic than conditions warrant. These men are all of the opinion that there is great danger of wasting time here. In view of these investigations and in view of the fact that half of the superintendents are already giving the proposed time or less per week for recitations in arithmetic in the different grades, it is

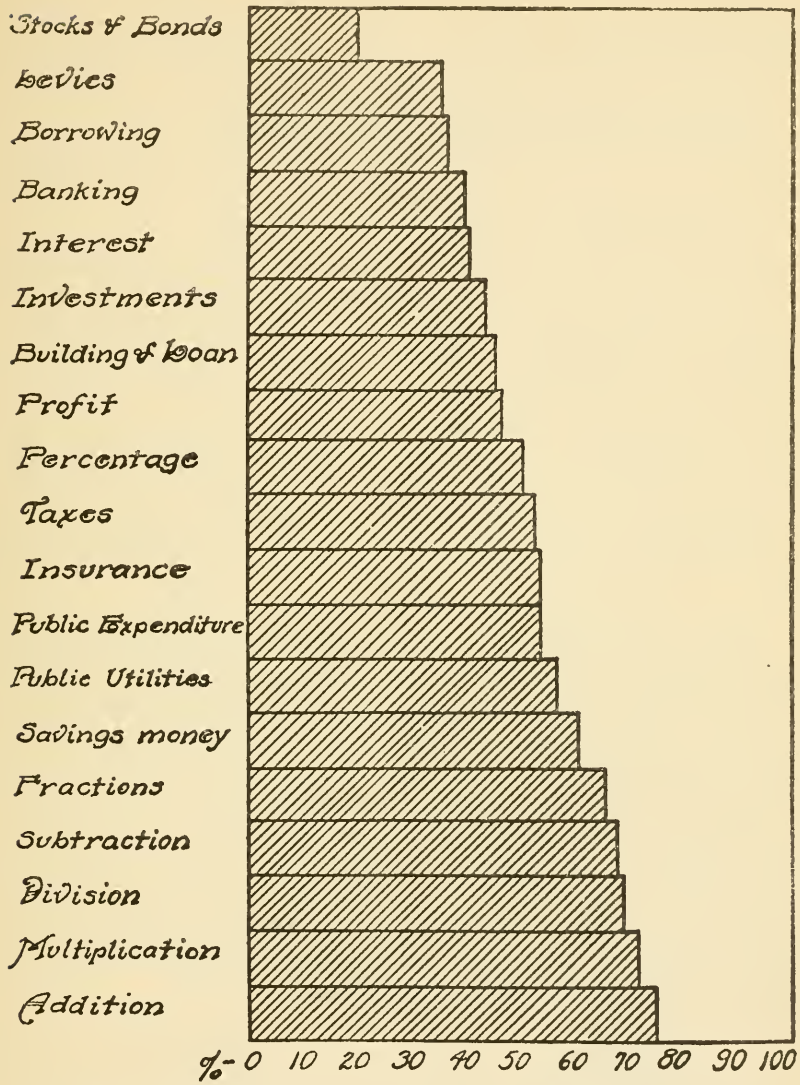

CHART II.—Percentage of superintendents who favor giving more attention to each of these topics (830 cities represented).

recommended that the recitation time devoted to arithmetic not exceed the following limits:

The first grade not to exceed 75 minutes per week.

The second grade not to exceed 100 minutes per week.

The third grade not to exceed 125 minutes per week.

The fourth, fifth, sixth and seventh grades not to exceed 150 minutes per week.

The eighth grade not to exceed 170 minutes per week.

These standards or norms are based on the median recitation time expenditure in 630 cities as reported before this section last year.

Table I shows the actual distribution of recitation time devoted to arithmetic in these cities. (Based on the investigations of Jessup and Coffman.) This table should be read as follows: In the first grade 136 cities allow no time for arithmetic, 7 allow 15 minutes per week, 18 allow 25 minutes per week and so on down the column. (Extreme cases were verified by supplementary correspondence, so that the variations here indicated are truly descriptive of variations in practice.)

Chart III shows the median and upper and lower quartiles for this table.

PERCENTAGE OF TIME GIVEN OVER TO DRILL

There is a clear tendency on the part of the superintendents throughout the country to emphasize the lower grades as the grades demanding the highest percentage of time given over to strictly drill work in the recitation. This is in line with the current educational theory of the nature of the mental life of the child. It is of interest to note in this connection that the school superintendents have either taken the advice of the theorists in this particular or as a result of their own experiences have agreed with the theorists. At any rate it is a fact that at the present time the majority of the superintendents are giving the highest percentage of recitation time to strictly drill work in the second, third and fourth grades. The median percentage of time given to drill work throughout the different grades is as follows:

First grade	43	per cent
Second grade	50	" "
Third grade	52	" "
Fourth grade	45	" "
Fifth grade	39	" "
Sixth grade	31	" "
Seventh grade	22	" "
Eighth grade	17	" "

TABLE I

No. Minutes per Week	Grades								
	I	II	III	IV	V	VI	VII	VIII	IX
0	136	31	4	.....	.....	.....	.....	24	439
15	7	2	.....	.....	.....	.....	.....	.....	.....
20	.....	.....	.....	.....	.....	.....	.....	.....	.....
25	18	1	1	1	1	.....	.....	.....	.....
30	10	7	5	1	.....	1	1	1	.....
35	1	.....	.....	.....	.....	.....	.....	.....	.....
40	6	4	2	5	2	1	.....	1	2
45	.....	.....	.....	.....	.....	.....	.....	.....	.....
50	99	36	3	1	4	4	2	2	.....
55	.....	.....	.....	.....	.....	.....	.....	.....	.....
60	27	22	10	5	3	4	5	5	4
65	1	.....	.....	.....	.....	.....	.....	.....	.....
70	3	3	1	1	1	1	2	1	1
75	103	127	59	12	4	.....	.....	2	.....
80	6	5	10	11	2	3	1	1	1
85	.....	.....	.....	.....	.....	.....	.....	.....	.....
90	5	6	12	3	4	2	3	3	2
95	.....	.....	.....	.....	.....	.....	.....	.....	.....
100	108	83	156	129	71	31	14	10	3
105	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	1	1	6	5	3	.....	.....	2	1
15	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	6	10	13	13	12	19	22	18	4
125	17	40	90	113	132	109	59	36	5
130	.....	3	4	5	6	9	3	.....	2
35	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	.....	.....	2	4	6	1	9	8	2
45	.....	.....	.....	.....	.....	.....	.....	.....	.....
150	53	66	98	129	158	196	210	192	30
155	.....	.....	.....	.....	.....	.....	.....	.....	.....
60	1	2	4	4	6	2	7	8	5
65	.....	.....	.....	.....	.....	.....	.....	.....	.....
70	.....	.....	2	3	3	1	.....	2	.....
175	6	8	9	20	31	28	35	37	6
180	2	5	6	3	5	9	16	15	4
85	.....	.....	.....	.....	.....	.....	.....	.....	.....
90	.....	1	.....	.....	.....	1	.....	.....	.....
95	.....	.....	.....	.....	.....	.....	.....	.....	.....
200	11	33	54	56	52	72	96	121	60

TABLE I—*Continued*

No. Minutes per Week	Grades								
	I	II	III	IV	V	VI	VII	VIII	IX
205	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	.....	3	2	.....	1	.....	2	5	7
15	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	.....	1	1	2	1	1	1	2	2
225	4	10	25	19	22	28	31	38	27
230	.....	.....	.....	1	1	2	2	2	.....
35	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	.....	4	8	8	4	4	4	7	1
45	.....	.....	.....	.....	.....	.....	.....	.....	.....
250	1	9	25	39	51	51	45	34	13
255	.....	.....	.....	.....	.....	.....	.....	.....	.....
60	.....	1	.....	1	1	2	2	2	.....
65	.....	.....	.....	.....	.....	.....	.....	.....	.....
70	.....	.....	1	1	4	3	2	1	1
275	.....	2	2	8	7	9	8	5	1
To 300	.....	4	14	24	30	30	38	33	5
To 350	.....	.....	.....	3	2	3	7	8	2
To 450	1	1	1	.....	.....	.....	2	3	.....

Chart IV shows the median and upper and lower quartile percentages of time given over to strictly drill work in the recitations in each grade in 564 cities. The standards or norms in the foregoing table are based on the median practice in these cities. (Based on the investigation of Jessup and Coffman.)

GRADE OF TEXTBOOK INTRODUCTION

In recent years there have been a good many advocates of the plan of postponing the introduction of a textbook in arithmetic until the third grade. Advocates of the policy have been found among experienced superintendents as well as among educational theorists. In connection with these recommendations it is of importance to note that of the 764 superintendents reporting last year on this topic it was found that the majority introduced the textbook in the third grade. Clearly the superintendents of this country have adopted the policy of placing a textbook in the child's hands at a relatively late time, as is indicated by the fact that a third of the schools are already postponing the time of introduc-

tion of textbooks until the fourth grade or later. The superintendent who is in doubt as to the grade in which a textbook should be introduced may find some satisfaction in knowing the practice of other superintendents. The exact distribution of the varying practices in connection with the grade of introduction of the textbook is indicated in Table II.

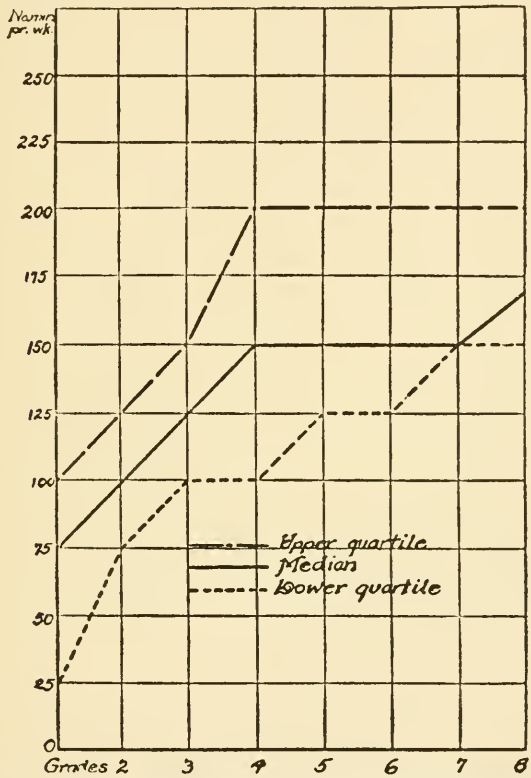

CHART III.—Showing median and quartile distribution of time per week given over to recitations (630 cities represented).

(Based on the investigation of Jessup and Coffman.) The meaning of Table II becomes clear when read as follows: Of the 267 cities reporting from the North Central territory, 1 introduced a text in the first grade, 18 in the second grade, 160 in the third grade, 64 in the fourth grade, 22 in the fifth grade and 2 in the sixth grade.

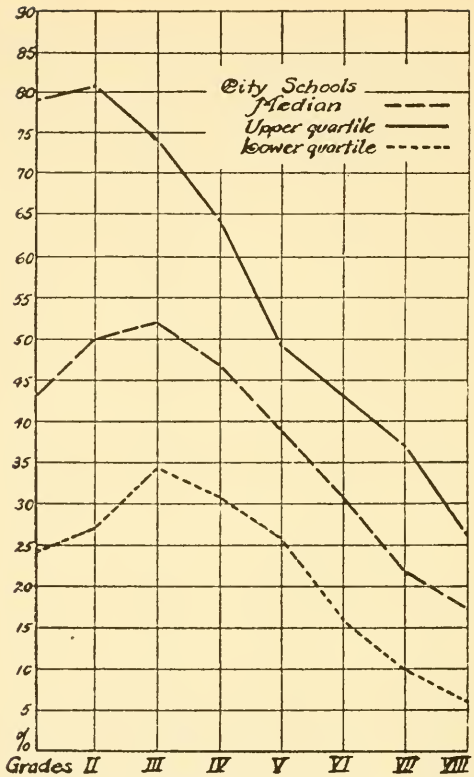

CHART IV.—Showing the median percentage of time given over to *strictly* drill work in the recitations in each grade (564 cities).

TABLE II

SHOWING GRADE IN WHICH AN ARITHMETIC TEXT IS INTRODUCED
(By Geographical Divisions)

	I	II	III	IV	V	VI	Total
North Central	1	18	160	64	22	2	267
North Atlantic	2	9	122	78	15	0	227
Western	0	6	25	17	2	0	50
South Central	0	13	44	17	1	0	75
South Atlantic	0	4	19	5	2	0	30
Counties	2	16	53	28	4	3	106
	5	66	423	209	46	5	754

GRADE OCCURRENCE OF TOPICS

The investigations of Dr. Payne, the Baltimore Commission, the International Commission and others touched the grade distribution of topics. The most thoroughgoing investigation of this sort, however, was made by Mr. L. H. Van Houten, a graduate student in the University of Iowa, now superintendent of schools of Toledo, Iowa, who investigated the distribution of thirty-seven selected topics in arithmetic in 147 different courses of study. These courses represented towns and cities of every size, distributed throughout the United States. He found wide variation in this particular. For example, notation was taught in every grade from the first to the eighth, although it was predominantly present in the third grade. Division was taught in every grade from the third to the eighth, but was predominantly present in the third and the fourth grades. Fractions were taught in every grade from the first to the eighth, and were predominantly present in the fourth and fifth grades. Multiplication tables were taught in every grade from the first to the eighth, but were predominantly present in the sixth grade. Simple interest was taught in every grade from the fourth to the eighth, although it was predominantly present in the seventh grade.

There seems to be less agreement in this particular than we might expect. No doubt many of the differences in practice are due to the textbook variations. Other differences are due to various conceptions of the nature of the mental life of the child and of the nature of the subject-matter. However, it may be said that in the main the four fundamental processes are most frequently taught in the first four grades; fractions, decimals and percentage most frequently in the grades from the fifth to the seventh, with the various applications of arithmetic to the social and economic phases of life becoming predominant in the seventh and eighth grades.

Mr. Van Houten, following the suggestion of the Baltimore Commission, distributed seven specific topics for grade frequency. From Table III it is seen that as far as these 147 cities are concerned the practice prevails of completing the forty-five combinations by the close of the second year; the multiplication tables by the third year; long division by the fourth year; fractions by the fifth year; percentage by the sixth year. Table III is to be read thus: 5 cities complete the forty-five combinations in the first year; 122 in the second year; 14 in the third year; 8 in the fourth year, etc.

While experimental evidence is lacking which will warrant a final statement in regard to the best time for the teaching of the various topics,

TABLE III

FREQUENCY TABLE SHOWING GRADE OCCURRENCE OF SEVEN SPECIFIED TOPICS (VAN HOUTEN)

TOPIC	GRADE							
	I	II	III	IV	V	VI	VII	VIII
Forty-five combinations completed	5	122	14	8	.....	.....	.....	.....
Multiplication tables completed	.....	3	87	53	.....	.....	.....	.....
Long division taught	.....	.....	26	107	5	.....	.....	.....
Addition and subtraction of fractions taught	.....	.....	.....	29	108	13	.....	.....
Multiplication and division of fractions	.....	.....	.....	.....	120	18	8	.....
Decimals taught	.....	.....	.....	.....	91	66	3	.....
Percentage taught	.....	.....	.....	.....	9	93	46	2

yet it is of importance to know the practice of such a large number of cities. It may be presumed that this represents the best judgment of the superintendent, based on experience.

OBJECTIVE STANDARDS

The most definite work in connection with the problem of determining objective standards of achievement for children of the various grades in the fundamentals of arithmetic has been done by Mr. S. A. Courtis, director of research of the Detroit public schools. Mr. Courtis has been able to secure the co-operation of hundreds of teachers, superintendents and school officials to the end that his standard tests have been given to many thousands of children.

As a result of these examinations Mr. Courtis proposes the following standards for children in different grades in connection with the use of his test, on fundamentals of arithmetic, Series B.

In presenting these standards Mr. Courtis says:

"The following table gives the number of examples that should be worked correctly in the time allowed in the four operations with whole numbers. The scores represent standard speed. Teachers should aim at 100 per cent accuracy. At present the average accuracy is about 65 per cent.

"Translated into words, the table means that in June the graduate of a grammar school should be able to work correctly in eight minutes twelve examples like that under Test 1; in four minutes twelve examples like that under Test 2, etc.

TABLE I

JUNE STANDARD INDIVIDUAL SCORE IN THE FOUR OPERATIONS WITH WHOLE NUMBERS

Grade	Test 1 Addition	Test 2 Subtraction	Test 3 Multiplication	Test 4 Division
3	3	4	3	2
4	5	6	5	4
5	7	8	7	6
6	9	10	9	8
7	11	11	10	10
8	12	12	11	11
Time allowance (minutes)	8	4	6	8
Typical examples...	345 487 631 205 943 683 859 175 794	34791 27468 18673 96737	4179 36	67) 61707

"For any class, the percentage of the class membership which in June can reach or exceed these standards in any operation is a measure of the efficiency of the teaching of that operation in that class. Illustration: If in June eight children out of forty have a score of twelve examples or better in Test 1, with an accuracy of 100 per cent, the efficiency of teaching of addition in that class would be 8140 or 20 per cent. Teachers are urged to measure the efficiency of their own teaching."

SUMMARY

Summarizing, first it is recommended that an economy of time may be effected by the elimination of obsolete material and by the increase of emphasis upon the fundamentals in the intermediate grades to the end that the children may have sufficient facility in the use of these phases to make it possible for the work in the upper grades to be centered around a concrete study of the quantitative phases of present-day social and economic life. Second, it is the dominant practice to center the drill work in the second, third and fourth grades. Third, the adoption of the median time in use throughout the country is recommended as an upper limit of time distribution. Fourth, it is the dominant practice to introduce textbooks in the third or fourth year. Fifth,

it is the dominant practice to complete the forty-five combinations by the end of the second year, the multiplication tables by the third or fourth year, long division by the fourth year, addition, subtraction, multiplication and division of fractions by the fifth, decimals by the sixth and percentage by the sixth or seventh year. Sixth, the standard achievement proposed by Mr. Courtis is commended as being worthy of the serious consideration of the superintendents of this country.

PART IV

MINIMUM STANDARDS AND CURRENT PRACTICES IN THE CONTENT SUBJECTS

CHAPTER IX

THE DETERMINATION OF MINIMUM ESSENTIALS IN ELEMENTARY GEOGRAPHY AND HISTORY

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The following pages report an attempt to evaluate different methods that have been proposed for determining the particular subject-matter that should be included as "minimum essentials" in two of the "content" subjects of the elementary program. The principal problem was not what particular items of knowledge constitute these minimum essentials, but rather what criteria and what methods may be employed with validity in determining these particular items.

A. THE NEWSPAPER-MAGAZINE METHOD OF DETERMINING MINIMA

At a meeting of the Committee on Economy of Time held in the fall of 1912 it was suggested that current literature could be profitably employed as a standard for determining the kind of geographical information that the school should provide. The proposal was to read current newspapers and magazines, record the geographical references, and determine from the frequency of these references the relative value of the various types of geographical information. Results of the application of the method presented at the meeting seemed to indicate that the content of geography as now taught in the elementary school would be greatly modified if materials were chosen upon this basis. The basis of selection itself represents at least one important use that may be made of geographical information.

The writer set this problem as one of the topics in his graduate seminary in educational values during the spring of 1913. A large number of newspapers and magazines were read by members of the

seminary, the geographical and historical references were recorded and classified, and an attempt was made to evaluate the general procedure as a means of determining minimum essentials in these two subjects. While this preliminary work was not sufficiently extensive to justify anything in the nature of conclusive statements, the writer ventures the following opinions as a result of the trial:

1. A thoroughgoing application of the method might well result in a table showing the relative frequency with which certain geographical and historical references recur in the discussions of current problems, and this table might prove suggestive to teachers and administrators, and especially to textbook-writers, as indicating the relative emphasis to be placed upon different topics.

2. So far as the results of our initial test justify inferences they suggest that the present content of history and geography in the elementary school is not radically inconsistent with the need for geographical and historical information as revealed by a study of current publications; that is, the historical and geographical references that seem to recur most frequently in current literature commonly involve types of information already well represented in the school program.

3. If one were to take the newspapers and magazines of a single month as a basis for applying the method, one would be likely to get results that would make the materials taught in the school appear to be somewhat ill adapted to real needs; but when "samplings" of these publications are taken representing periods of from seven to ten years the recurring references stand out distinctly. The actual facts to be taught in the schools should, in the writer's judgment, emphasize the kind of information represented by these recurring references. To provide a basis for interpreting the numerous non-recurring references the pupil should be supplied with geographical principles of general applicability, and with general methods of procedure in finding and interpreting specific information. The recent developments in the teaching of geography have certainly emphasized this type of compromise—a compromise that is inevitable in framing curricula for the elementary and secondary schools. It is quite impossible to predict the precise type of particular knowledge that one will need in order to understand the current literature of ten years hence. To limit our instruction to the specific information that happens to be necessary at the present time would be a most shortsighted policy, but the particular facts

that have been of outstanding value for the past decade may reasonably be predicted to retain their value for some time to come. Beyond a careful impressing of these—using them, indeed, as a basis—it is possible to develop general principles and methods of work that will serve to adapt intelligence to the varying and non-recurring situations.

4. It would be reasonable to infer that, in the material which they furnish to their readers, newspapers are somewhat limited by the basis of interpretive knowledge that they may assume on the part of their readers. This inference is strongly borne out by the results of our initial tests. In certain newspapers we found geographical and historical references very few and far between. In such papers the appeal is largely upon the basis of primitive interests (or instincts) which can be safely assumed to be common to all; hence the so-called "sensational" character of such journals. On the other hand, there are journals that presuppose a large capital of interpretive information among their readers, and which are, for this reason, commonly limited in the number of their readers. This is strikingly illustrated by one periodical which was taken over by a publisher some years ago with the avowed intention of increasing its circulation. He succeeded admirably. We computed the number of historical, geographical, and literary references from an equal number of samplings over a period five years before and five years after the magazine changed hands. As the circulation increased the number of references decreased, and for some classes of references the decrease was almost precisely in proportion to the increase in circulation.

5. It would appear from these suggestions that any method that attempts to utilize current literature as a criterion for the selection of educational materials should be applied with a distinct understanding that it may simply result in a circular form of reasoning: current literature of a "general" nature is likely to represent pretty accurately the level of "general" education. In some respects, it is just as valid to infer from the content of the school program what the character of current literature *will* be as to infer from the character of current literature what the content of the school program *should* be. Certainly, if there is a causal relationship, it is from the school to current literature, and not vice versa.

Typical results of the initial tests.—From the reports of the members of the seminary who aided the writer in testing this method, the following

tables of frequencies have been selected as illustrating the possibilities and limitations of the method; the reports from which these tables are taken were made by the following persons: Miss Alice Biester, Miss Margaret Cobb, and Mr. H. T. McKinney.

Miss Biester collected and classified the geographical and historical references and allusions in eighteen issues of the *Outlook* and the *Literary Digest*, representing a period of seven years ending with 1913.[1] She found in these eighteen journals a total of 2,237 geographical references. The distribution was as follows:

	Per Cent
References to facts of location, size, direction, etc., which may be assumed to require for their understanding a knowledge of "place and location" geography	53.5
References to political divisions and facts of government which may be assumed to require a knowledge of "political" geography	25.1
References to industries, commerce, products, etc., which may be assumed to require a knowledge of "commercial" geography	5.8
References to people, customs, religion, education, etc., which may be assumed to require a knowledge of "social" geography	4.8
References to places as scenes of historical events, which may be assumed to require a knowledge of "historical" geography	1.7
Other references primarily of local or transitory interest	8.9

A grouping of this sort is obviously subject to the errors or peculiarities of individual judgment, but it may be said that the classification just presented is quite consistent with those furnished by other readers. Except for the absence of explicit reference to physiographical principles, this grouping represents fairly accurately the distribution of emphasis in the textbooks ordinarily used in the seventh and eighth grades. The

[1] The method of counting references is an important detail in the technique of this work. Two methods were tried: (1) counting one for each term (such as the name of a place or of a historical event) or each statement with a geographical or historical content; and (2) taking as the unit the article in which the reference occurs, and counting one for each article containing a certain type of reference. (Thus, if London as a commercial center is referred to in an article, this group of references receives one credit, no matter how many times the word London may recur in the course of the article. But if in the same article London is referred to in another way a separate count under its appropriate group is made for this reference.) A comparison of these two methods showed clearly that the latter is to be preferred, and this was used in two out of the three investigations reported.

physiographical principles, however, are precisely the "general" principles to which we referred above; that is, their function is broadly interpretive and adaptive; they "cover" a host of particulars too numerous in the aggregate, and too insignificant separately, to warrant specific attention.

Another suggestive grouping is based upon the frequency of references to the various continents. If one is to read intelligently the journals which formed the basis of this test, one will find occasion to apply one's knowledge of the continents in approximately the following proportions (the maximum frequency of reference being represented arbitrarily by 100):

North America	100	Africa	4
Europe	73	South America	3
Asia	13	Australia	1

The principal European countries had an importance for the readers of the journals in question in the following proportions (giving England, as the country most frequently referred to, the arbitrary value of 100):

England	100	Italy	32
France	80	Turkey	30
Germany	70	Austria-Hungary	24
Russia	35	Spain	22

The countries and colonies of Asia show the following proportions of references as compared with England: China, 55; Japan, 50; India, 19; Korea and Persia (typical of the less important divisions), 4 each.

This order of frequency in references to European and Asiatic countries is fairly constant in the two reports which furnish comparable data.

The frequency of reference to cities is perhaps not so significant, although here, too, there is a goodly measure of similarity among the different reports. A combined rating, which may mean much or little, is given herewith:

FOREIGN CITIES (NEW YORK, 100)

London	31	Constantinople	12
Paris	26	St. Petersburg	7
Berlin	15	Vienna	7
Rome	12		

AMERICAN CITIES

New York City	100	Chicago	26
Washington	27	Philadelphia	20
Boston	27		

There is, in general, a direct although not a perfect correlation between the number of references to cities and the size of the cities—except, of course, that capitals of countries have an importance not always represented by their size.

Compared with references to countries and cities, the references to physical and physiographical features are not numerous. For readers of the journals used in the investigation, information about the following rivers seems to be of the greatest importance and approximately in the order named for the first five: Mississippi, Hudson, Ohio, Missouri, Rhine, Nile, Danube, St. Lawrence, Potomac, La Plata, Seine, Niagara, Rio Grande, Columbia, Amazon, Congo. References to seas and gulfs follow the following order: Mediterranean, Aegean, Mexico, Black, Adriatic, Marmora, Red, and Caspian. The straits most frequently mentioned are the Dardanelles, Bosporus, Magellan, and Bering.

In the journals read, historical references were less frequent than geographical references. In connection with American history the presidents are more frequently referred to than any other group of historical personages, perhaps because of the advantage of associating events in our national history with presidential administrations. In the two reports in which historical data are given Lincoln easily heads the list as the American personage most frequently referred to, having a higher frequency of reference, indeed, than any living person. The following table includes the names of the persons (not now living), prominent during the period of national history, in the order of the frequency of reference in the two reports; the order, however, is not significant beyond the first six (Lincoln is given an arbitrary value of 100):

Lincoln	100	Cleveland	17
Washington	66	McKinley	17
Jefferson	51	Webster	13
Jackson	24	Franklin	10
Grant	20	J. Q. Adams	10
Clay	20	Buchanan	10

In both reports references to wars are more frequent than references to any other single type of historical event, the Civil War easily leading in frequency of reference.

To the readers of the journals in question a very significant importance attaches to an understanding of the federal government. The most important topics appear to be, in the order of frequency of reference: (1) the Constitution itself; (2) the amendments to the Constitution; and (3) the constitutional convention. The number and character of references is especially noteworthy in connection with the large emphasis that has been laid in recent textbooks on the "critical period" in American history. Some suggestions as to the important points of emphasis in the study of civics are embodied in the frequency of references to the powers of Congress, to the different functions of the Senate and the House, and to the administrative departments. The departments stand in the following order of frequency in the references: (1) Department of State; (2) Department of the Interior and Attorney-General's office; (3) Departments of the Treasury and of War; (4) Post-Office Department, and Departments of Commerce and of Agriculture.

In one of the reports, which involved a reading of samplings from a general and rather "popular" magazine covering a period of ten years, there are some suggestions as to the characters and events of world-history with whom (or with which) a speaking acquaintance is perhaps necessary if one is to read such literature intelligently. Of the personages, Napoleon easily heads the list, and the number of references to him, even in this popular magazine, suggests the importance of emphasizing the more important facts of his career at some point during the elementary course in United States history, preferably during the study of the events leading to the War of 1812. Among the other figures of world-history whose names recur with some measure of frequency are Caesar, Louis XIV, Jeanne d'Arc, and Luther. As a commentary on those criticisms of the present-day teaching of history which hold that too much attention is given to the past and too little to recent and contemporary events, it is interesting to note that, in the samplings from ten volumes of this popular American magazine, Caesar is referred to more frequently than any American character except Lincoln, Washington, and Roosevelt; Jeanne d'Arc as often as Cleveland; and Napoleon more frequently than any living political or military character.

Certain critical events or epochs of European history are also referred to with sufficient frequency to suggest the importance of furnishing some information regarding these events in connection (as is readily feasible) with contemporaneous or related events of American history. The most important of these are, in the order of their frequency of reference: the Renaissance, the French Revolution, the Middle Ages, and the Elizabethan period.

While literary references were not included within the scope of the reports, they were collected by one of the readers. In the samplings of the ten volumes of the popular magazine above referred to, Shakespeare's name is mentioned more frequently than that of any other person of any group or age. Other names that recur in the literary group are Victor Hugo, Tolstoi, Burns, Homer, Carlyle, Samuel Johnson, Ibsen, Kipling, and Shaw; and, among Americans, Holmes, Mark Twain, and Howells. Of references to the works of literature, the most frequent are to the plays of Shakespeare, especially the *Merchant of Venice*, *Hamlet*, *Romeo and Juliet*, and *Macbeth*. Of recurring terms that have their source in imaginative literature, the following deserve mention: Lilliputian, Utopia, Utopian, Pickwickian, Rip Van Winkle, Helen of Troy, Shylock, Falstaff, and Gulliver.

It is quite likely that the frequencies of reference given in the foregoing tables would vary with different types of journals, although, as has been suggested, there was a striking resemblance among the three reports which represented, in all, samplings of the *Literary Digest*, the *Outlook*, *Collier's*, the *World's Work*, the *Cosmopolitan*, and the *Review of Reviews*. The earlier work done with newspapers is not included in these reports. The weekly and monthly journals offer much better advantages for applying the method, and it is not probable that anyone would object to the assumption that the work in geography and history in the seventh and eighth grades should fit the pupil to read intelligently such journals as the *Outlook* and the *Literary Digest*, in so far as these journals employ references and allusions to geography and to United States history.

An extended investigation covering forty or fifty periodicals of various types and representing a period of at least ten years would certainly form a basis for an interesting comparison of the frequencies with which places, events, and personages are referred to; and this

comparison might possibly form one index of the relative educational value of the different items of information. Our initial investigations show that the comparisons can be stated in definite quantitative terms; but whether, once these relationships are stated definitely and quantitatively, relative educational values are thereby indicated with the same quantitative certainty is quite another question. The difficulty lies in the fact that both geography and history in the elementary school have other functions to fulfil in addition to providing an interpretive basis for the intelligent reading of current literature, and a method which furnishes very definite standards of value in respect of a single function may do marked injustice to other functions. Before extended modifications are made upon the basis of a single standard, therefore, it would be essential to come to some agreement as to the various functions that a subject should attempt to fulfil.

An extended investigation upon the basis of magazine and newspaper references would probably be worth the cost. It would, however, involve more work of a routine character than could be asked of graduate students. Hence the limitation of our "investigations" to a "trying-out" of methods.

B. JUDGMENTS OF SPECIALISTS AS A MEANS OF DETERMINING MINIMA

A second method for determining minimum essentials is to collect the judgments of special students of the subjects under discussion. This method was applied by Mr. J. E. Wooters in determining the dates and events that may profitably be memorized in the seventh and eighth grades. The investigation was undertaken as part of the work of the seminary mentioned above. The results were published in *School and Home Education* for December, 1914. A questionnaire was submitted to 150 members of the American Historical Association, inclosing a list of 52 dates, and requesting that the 20 most important dates in this list be arranged or "ranked" in the order of their importance, and that other dates not given in the list be inserted if, in the judgment of the person making the reply, these other dates were more important than any given in the list. Eighty-six replies were received to this questionnaire, and of these 49 were used in making the final computations. Every date given first rank on a question-sheet was given a value of 20; every date given second place was given a value of 19; and so on.

The 20 dates which resulted from these combined ratings, and the combined value accruing to each, were as given in Table I.

TABLE I

Rank	Date	Value	Rank	Date	Value
1.....	1776	1,323	11.....	1812	752
2.....	1492	1,261	12.....	1765	629
3.....	1607	1,163	13.....	1783	618
4.....	1789	1,100	14.....	1865 (April 14)	389
5.....	1620	961	15.....	1850	591
6.....	1803	955	16.....	1854	590
7.....	1861 (April 14)	901	17.....	1775	585
8.....	1787	821	18.....	1781	584
9.....	1863 (January 1)	808	19.....	1823	526
10.....	1820	793	20.....	1846	470

An accumulation of similar rankings from a larger number of specialists in history would doubtless result in some slight variations from the order in the given table; it is not likely, however, that the modifications would be at all significant. It is noteworthy that the lists submitted by some of the most eminent of the historians who consented to make the rankings corresponded almost precisely with the final combined list; Professor Edward Channing's rankings, for example, included each of the dates above given, and in the same order with two or three unimportant exceptions. Professor A. B. Hart's rankings were also closely parallel to those given above.

How many dates and events may be profitably associated through automatic memory as a part of the history work in the elementary school is a question that this investigation does not attempt to answer. It was the opinion of the large majority of those answering the questionnaire that a certain number of these automatic associations are essential. An attempt to fix too many will doubtless result either in an excessive amount of drill on dates or in an inadequate mastery of the most important. The problem would seem to be, then, to have the dates listed in the order of their importance, leaving the minimum requirements to be determined by another type of investigation. The writer is personally convinced that twenty may be profitably accepted as a tentative minimum for thorough mastery. This number is smaller than that proposed by the Minnesota report on elimination[1] which gives a list of

[1] "Report of Committee on Elementary Course of Study," *Bulletin No. 51*, Minnesota State Department of Education.

thirty-seven dates—without, however, stating the principle upon which they have been selected.

Mr. Wooters also asked in his questionnaire for judgments regarding the laying of certain other automatic bases in seventh- and eighth-grade history. Out of 70 specialists in history who replied to the question, 49 thought it advisable to have the names of the presidents memorized in the chronological order of their administrations. The importance of making this requirement is also suggested by the results of the newspaper-magazine investigations referred to earlier in this report. In answer to the question, "Should any part of the federal constitution be memorized?" 39 out of 68 who replied answered "Yes." The Preamble and Article I seemed to be the parts most frequently indicated as suitable for memorization. In answer to the question, "Should any part of the Declaration of Independence be memorized?" only 30 out of 67 replying answered "Yes."

The present writer is convinced of the general validity of this method of appealing to special students of the subjects under discussion for judgments regarding the educational value of different topics and items. He would hold, indeed, that every attempt to determine relative values or minimum requirements should involve such an appeal. The facilitating of judgment by asking for "rankings" is an especially valuable feature of the general procedure. It will be essential to check the results obtained through an application of this method by investigations of other types, for unfortunately, as the replies to Mr. Wooters' questionnaire sufficiently indicate, many special students of history have given little attention to the problem of teaching history in the elementary school, and seem indeed quite impatient toward anyone who suggests that a special problem of rather large magnitude is here involved.

C. A COMPARISON OF SCHOOL TEXTS AS A METHOD OF DETERMINING PRESENT-DAY MINIMA

The results of the newspaper-magazine investigations referred to above suggested to the writer the importance of knowing what topics in geography and history have been common to the elementary courses in the immediate past and what topics are common to such courses today. If any modifications are to be made they should certainly be made upon the basis of this knowledge. If a fact or a group of facts has been an ingredient of the common pabulum of universal education for a school generation or longer the presumption is in favor of retaining it,

or at least of modifying it only very gradually. An important function of the "informational" or "content" subjects of the elementary program is to insure a common basis of ideas and knowledge among all of the people. This is all the more important in a democracy, for democratic government involves the collective consideration of common problems, and it is essential to this end that there be a goodly supply of ideas and information common to all of the members of the democratic group. An idea or a fact or a bit of information about a historical event has its value greatly enhanced if it is a matter of common knowledge; it becomes thereby a possible point of reference in collective thinking—a common denominator in the exchange of experience. In the light of this contention, the facts, ideas, and items of information that have been and are the common property of the great majority of the people assume a large significance to the student of educational values.

At the beginning of the present academic year the writer undertook with his graduate seminary an analysis of 24 textbooks that have had an extensive use in the seventh and eighth grades. These books are being carefuily compared as to scope of treatment, amount of space devoted to different topics, and style of treatment. Inasmuch as the texts represent each decade since 1860, it has been possible to note the changes that have taken place in the content of elementary history during the past fifty years. The plan of investigation contemplates a determination of the various topics treated and the relative emphasis given to each as represented by the proportion of the entire book devoted to its discussion. It is a fair assumption that the emphasis in teaching generally follows rather faithfully the emphasis indicated by the text; hence a determination of this sort will indicate more clearly than any other practicable method the actual content of the historical instruction. Certainly it is much more trustworthy as an index of past and present "tendencies" than the conclusions drawn from comparing courses of study or school manuals.

This investigation has not as yet been completed, and the results will not be ready for publication prior to the coming summer. A few of the data that have already been tabulated may serve to suggest in a general way the possibilities of the method. It is the intention to continue this procedure with a similar analysis of geographical texts.

An important movement in the last two or three decades in the teaching of elementary history has been to lay less stress upon military affairs,

and to give more attention to social and industrial development. The general tendency is well represented by the tabulations in Table II, showing the relative emphasis that has been and is being given to certain important epochs in American history as indicated by the proportionate amounts of space given to the discussion of the various epochs in the different texts.

TABLE II

AVERAGE PROPORTION OF SPACE OF ENTIRE BOOK DEVOTED TO VARIOUS PERIODS

Period	In Four Books Published from 1860 to 1875	In Four Books Published from 1875 to 1890	In Seven Books Published from 1890 to 1905	In Seven Books Published since 1905
Colonial wars	5.3 per cent	4.2 per cent	3.7 per cent	3.6 per cent
Pre-Revolutionary period (1763–1775)	3.1 " "	1.9 " "	3.6 " "	3.9 " "
War of the Revolution	18.0 " "	15.3 " "	11.6 " "	10.0 " "
1783–1812 (including "critical period")	5.7 " "	9.1 " "	11.1 " "	13.5 " "
War of 1812	5.9 " "	3.2 " "	3.9 " "	3.2 " "
Civil War	15.0 " "	13.1 " "	11.9 " "	10.5 " "

Not only has the proportion of space devoted to wars generally (and, for the major wars, steadily) decreased, but the treatment of war in the school histories has been modified, less attention being given in the more recent texts to the details of battles and campaigns and more attention to the causes of the wars and to social and economic conditions as influenced by the wars.

The treatment of the period of national expansion and growth covering the years 1814–61 is also more extended and detailed in the later texts than in those published twenty and thirty years ago. The proportion of space given to colonial development remains approximately the same. Perhaps the most significant increase in emphasis is represented by the figures in Table II, showing the proportionate space devoted to the "critical period."[1] When the more specific topics are tabulated, the increase of emphasis on industrial and social history will doubtless be clearly revealed.

The names of persons associated with the various periods are particularly significant from the point of view of minimum essentials. It

[1] The Minnesota report on desirable eliminations recommends (p. 6) that the use of the term "critical period" be discontinued, but the reason for the recommendation is not given.

may be truly said that there is no "Hall of Fame" that can compare for a moment with the common pabulum of the elementary program. If a name finds a niche here, it should certainly deserve the honor. As a matter of fact there are wide variations in the number of historical characters referred to in the different texts, and only a very narrow range within which all texts are in substantial agreement. This is clearly shown in the following tabulations.

For the period of exploration and discovery, a total of 109 different names are mentioned in 22 different books, the most common number being between 34 and 39. Of this total, however, only 4 are found in all of 22 books. Giving these an arbitrary value of 100 each, the principal characters of the period in question assume the following degrees of importance *as measured by this standard:*

Columbus	100	Cortez	82
John Cabot	100	Virginia Dare	82
Balboa	100	De Soto	77.5
Raleigh	100	Verrazano	77.5
Vespucci	95.5	Menendez	77.5
Drake	95.5	White	77.5
Queen Elizabeth	95.5	Narváez	77.5
Sebastian Cabot	91	King Ferdinand	77.5
Ponce de Leon	91	Cartier	77.5
Queen Isabella	91	Leif Ericsson	73
Gilbert	86.5	Gosnold	73
Magellan	82	Henry VIII	73

For the period of colonial growth, 200 different names are found in 21 different books, the average number of names in each book being 50. Only 9 names are found in all of the books: John Smith, John Winthrop, Peter Stuyvesant, William Penn, Roger Williams, Edmond Andros, William Berkeley, James Oglethorpe, and George Carteret. The following additional names are found in 19 out of the 21 books: Nathaniel Bacon, Pocahontas, King Philip, George Calvert, John Berkeley.

In connection with the French and Indian War a total of 109 different names are found in 23 books, but of these only 3 are common to all: Washington, Braddock, and Wolfe; while a fourth, Montcalm, is missing in but one.

The pre-Revolutionary period gives a total of 79 different names in 23 books, with only one name found in all—Patrick Henry. James Otis,

William Pitt, and Gage find a place in 19 out of the 23 books and Samuel Adams in 17.

The War of the Revolution involves in 21 books a total 252 different names, with only 7 common to all, and others arranged on a percentage basis as follows:

Washington	100	Howe	95
Greene	100	Schuyler	90
Gates	100	Allen	85
Arnold	100	De Kalb	85
Cornwallis	100	Morgan	85
Gage	100	Tarleton	85
Lafayette	100	Lincoln	85
Franklin	95	Warren	80
Jones	95	Putnam	80
Stark	95	Montgomery	80
Wayne	95	J. Adams	80
Charles Lee	95	Pickens	80
Marion	95	R. H. Lee	75
Jefferson	95	Pulaski	75
André	95	Clinton	75
Burgoyne	95	Prescott	75
Sumter	95	Sullivan	75

The period 1783–1812 gives a total of 93 different names in 18 texts, the usual number in each book being about 24. Common to all of the books are the names of the four presidents serving in this period (Washington, Adams, Jefferson, and Madison), and, in addition, Jay and Hamilton. Napoleon, Aaron Burr, and Tecumseh are referred to in 15 out of the 18 books.

The period 1812–1861, while rich in names mentioned, shows a very small proportion common to all texts. In addition to the names of the presidents, the only names found in all of 23 texts are O. H. Perry, Winfield Scott, Henry Clay, John Calhoun, J. C. Fremont, and John Brown. Isaac Hull, Webster, Douglas, and Dred Scott find a place in 21 texts.

The period of the Civil War shows a much higher proportion of names common to all of the texts. In 22 books, 21 names are common to all. These are: Lincoln, Anderson, Beauregard, Jackson, McDowell, McClellan, Rosecrans, J. E. Johnston, A. S. Johnston, Burnside, Buell, Thomas, Grant, Farragut, Davis, Sherman, Lee, Hooker, Meade,

Early, and Sheridan. In 21 books the following additional names appear: Bragg, Mason, Slidell, Pope, and Hood.

Much more significant than the names of persons common to the school histories are the topics that are common to all of the texts and the proportion of emphasis given to each topic. Once these data are tabulated we shall know with a fair degree of precision what the common pabulum of the elementary curriculum in respect to history has been in the immediate past, what it is today, and what changes have been made within the last fifty years. In the opinion of the writer, it will then be possible to proceed with measures that may determine from various points of view the additions or eliminations that may be necessary or desirable.

The following graduate students are aiding the writer in this analysis of texts: Misses Bernice Harrison, Margaret Cobb, Olive Paine, Mali Lee, Helen Clark, and Elizabeth Fuller; Messrs. H. Johnston, H. O. Rugg, and A. J. Beatty.

CHAPTER X

THE ESSENTIALS OF LITERATURE

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As supplementary to the chapters on reading and on language and grammar, the following short statement concerning the essentials in the study of literature in the elementary school is offered. A confessedly inadequate treatment is worth while if for no other purpose than to emphasize the fact that literature should be regarded as one of the principal content subjects in the school. Much of the reading, it is true, is, and should be, of a literary character, but the early stages of primary reading must necessarily involve definite attention to graphic forms, and the work which follows should be devoted in part to training children in the reading of books of scientific and matter-of-fact character. As matters stand, moreover, the selections found in the reading-books are often mere excerpts from longer pieces and cannot possibly take the place of complete works of art from the point of view either of fulness of impression or of power of sustained attention. There should be, and in a large number of the schools in the country there is, a continuous course in literature both in prose and in verse from the beginning of the first grade to the end of the eighth.

It is not likely that too much time is devoted to literary masterpieces in any of our elementary schools. The problem of economy is one of selection and method of treatment. For almost a generation a sifting process has been going on which seems to have resulted to a remarkable degree in unanimity of choice of literature for the elementary school and even of uniformity of grading. This appears in two interesting studies made at the University of Chicago under the direction of Assistant Professor J. F. Bobbitt and published in the *Elementary School Teacher*.[1] Some fifty courses of study from representative cities and towns were examined as to the stories and poems included and the

[1] XIV, Nos. 4 and 5, December, 1913, and January, 1914.

grades to which the various selections were assigned. In the lists of longer readings—books, long stories, and longer poems—138 authors represented by 296 titles were found. Of these, 183 titles appeared four or more times in the fifty courses, while a number of selections were named as many as twenty-five or even thirty times. From the entire list a selection by grades was made of the titles appearing nine times or more. This ought to be of very great value to any course-maker in determining what pieces are most likely to be of most value in certain grades in his own school.

The titles of the literary selections most frequently memorized in the elementary school were taken from thirty-four state, county, and city courses of study, including Hosic's *Elementary Course in English*. Eight hundred and thirty-four titles were counted, and by eliminating all appearing less than three times, it was found that 140 authors were represented by 383 titles. These were then arranged in two tables, the first alphabetical by authors and the second alphabetical according to the grades for which the poems were most often recommended. As in the case of the longer readings, this second table supplies a list of well-tried selections for each of the eight grades and might well be made the foundation for a course in any school.

There remains the question whether there are any fundamental principles in accordance with which selection may be made of the most useful poems, stories, and plays to be taught to children. It is the function of literature to serve as the artistic interpretation of life. It is, throughout, the expression of human interests, human emotions, and human nature. By means of it children are to come to appreciate the ideal elements in life and nature and by means of it their aspirations are to be shaped, their feelings refined. It would seem, therefore, that the choice of literary material for school use should depend upon the power of appeal and enduring value of the content of the selection under consideration. One must take into account also the maturity, subtlety and scope of ideas, as well as the need of a balanced ration.

With such a point of view a committee of principals and teachers in the city of Chicago undertook some years ago to compile a classified list of poems and stories for the grades. Some of the headings which were used were as follows: "Home and Community," "Ideals of Life and Conduct," "Physical Nature," "Rhyme and Nonsense," "Songs," and in the case of prose pieces, "Household Tales," "Wonder Stories,"

"Heroism and Romance." Everyone will see the danger of such a definite classification. It may of course narrow the view of a given selection; it may lead to didactic treatment; and it cannot in any case be exhaustive. It may, however, suggest the chief value of a given selection, and above all it may serve to secure for the children a variety of experience with literature.

A somewhat similar outline of the work in literature was prepared about the same time (December, 1902) by Miss Mary McSkimmon for the schools of Brookline, Massachusetts. She selected an ethical center for each grade and made a list of stories, poems, and entire books to go with these. These ethical centers were as follows:

Grade I. The Love of Home and the Duties of Children Therein.

Grade II. The Love of Animals, and the Responsibility for the Care and Happiness of Pets.

Grade III. Love for One Another; the Child as an Individual Member of the Human Brotherhood.

Grade IV. The Duty of Self-Control.

Grade V. Courage: the Duty of Purposeful, Heroic Effort.

Grade VI. Obedience, and Service Rendered through Obedience.

Grade VII. Wisdom: Service through Knowledge and Goodness.

Grade VIII. Patriotism: the Character of a Good Citizen.

Grade IX. Service through Character.

The difficulty inevitable in such a plan is, of course, that of finding material within the comprehension of the children of the various grades. There is danger also that pieces that ought to be taught will fall outside the scheme. The list selected by Miss McSkimmon is, however, very good and may well serve to emphasize the importance of including in any list of literary material for children a number of pieces the spirit of which is distinctly ethical. This must not imply a didactic treatment in the classroom.

Very little experimentation or really scientific study seems to have been undertaken in the field of children's literature. Two examples are to be found in British publications. In the *Journal of English Studies*[1] appeared recently a series of short poems and selections from poems representing a sort of scale of literary excellence. These poems were presented to different groups of students, both youthful and mature, some of whom had had literary studies in school and others not. The

[1] January–April, 1914.

object of the experiment was to determine whether school work in literature actually develops discriminating taste. The author of the article concludes that it does. His experiment might well be repeated by others, who should take pains to use only complete selections unless, indeed, such elements of treatment as phrasing or rhythm are to be specially considered.

The second contribution is by Professor I. Lawrence, who writes on "Children's Humour" in the *Journal of Experimental Pedagogy*.[1] He collected some 200 papers from several types of schools with the aim of discovering what children laugh at and how this varies according to age and circumstances. The children wrote, as unprepared compositions, accounts of the funniest things that they had heard, read, or directly experienced.

Professor Lawrence divided the papers into three groups. The first was made up of those written by very poor children ranging from ten to thirteen years of age. They found their humor principally on the street and at the "movies." The principal source was grotesque appearance and action. The second group was written by children from comfortable homes. They found their humor in the trivial incidents of current books and magazines. They showed, however, much more power of intellectual perception than the first group. The third group was written by children from fourteen to seventeen years of age who were attending an excellent secondary school. Their home circumstances were those of the upper middle class. The papers in this group were markedly individual. The young people showed a considerable development of self-realization. The laughter was critical.

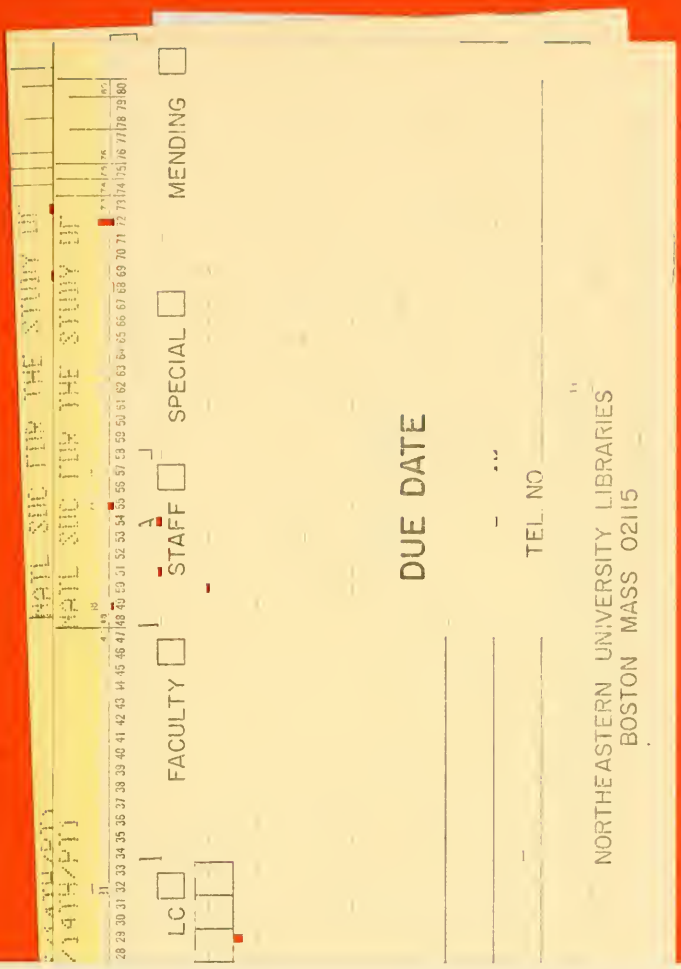
Such a study as this is highly suggestive as to the kind of work which might be undertaken to discover what powers of appreciation children in certain circumstances and at certain stages of intellectual growth might be expected to have, and therefore what material could be made to appeal to them. This is not to say, of course, that they should be given only what they can understand readily, but rather what they can reach up to.

This suggests a closing word. It is undoubtedly true that much of the time now spent on the study of literature in the elementary school is wasted because of a lack of definiteness of aim and of appreciation of the values peculiar to the selections taught. The visitor to the

[1] II, No. 5, June, 1914.

reading class as well as to the story-hour is often impressed with the evident preoccupation of both class and teacher with a multitude of details which are not in any way related to the chief purpose of the selection. If each piece were approached with the expectation that it will have a definite impression to make and if the teacher were to bear in mind from first to last that details are valuable only as they enable this chief impression to be made effectively, the hours spent with the masterpieces of the poets and the story-tellers by our children would be many times more memorable than they usually are at present. To speak of but a single possibility, it is literature which, above all else, may instil into the mind those ideas upon which our American democratic society is founded and which bind us together as a united people.

Date Due



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